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[OFFICIAL NOTICE.]

Annual Meeting, Wisconsin Gas Association.

WISCONSIN GAS ASSOCIATION,
OFFICE OF THE SECRETARY,
MILWAUKEE, March 4, 1911.

To members of the Wisconsin Gas Association: The annual meeting of the Wisconsin Gas Association will be held in Milwaukee on May 17-18th, 1911, and it is planned to devote a considerable portion of the time to the subject of "Efficiency Engineering" or "Scientific Management." This new profession, which has recently received so much publicity in connection with the railroad rate hearing, is, of course (to some extent), only an old friend with a new title, proposing, as it does, to develop net earnings by scientific management and exact methods, instead of by the hit-or-miss methods in common use.

We are all, in a sense, trying to be efficiency engineers, in that we are constantly working to increase earnings and keep down expenses, eliminate friction and lost motion in men and machines, promote co-operation, etc., and if the efficiency engineer can enable us to do all this in a better and surer way we certainly can use him.

Some of us—perhaps most of us—have been wondering whether or not an expert analysis of our organizations and methods would disclose possibilities of profit development to which we are blind from long contact and habit, and it has been thought that, if we should all get together next May, prepared to contribute to a discussion of the matter, considerable light would be thrown on the subject. It is suggested that each member keep the matter in mind and try to bring to the meeting a statement of at least one thing he has accomplished, or hopes to accomplish, to increase efficiency, and such questions as to how improvements can be made, as have suggested themselves to him. The matter is brought to your attention at this early date, with the hope that you will think it of sufficient importance to warrant giving it some thought, and with the further hope that you will write, stating your opinion of the plan and making any suggestions which occur to you.

We need the help of every member, even if it can go no further than sending in a question for the meeting to discuss and, if possible, to answer.

[OFFICIAL NOTICE.]

Seventh Annual Meeting, Iowa District Gas Association.

OFFICE OF THE SECRETARY.
DES MOINES, IA., May 1, 1911.

The Seventh Annual Meeting of the Iowa District Gas Association will be held at Clinton, Ia., May 24th, 25th and 26th. Headquarters will be at the Lafayette Inn. Reservations should be made early. Thos. Crawford, General Manager, Clinton Gas Light and Coke Co., is Chairman of the Committee of Arrangements. The afternoon session and entertainment on May 25th will be held on a steamboat on the Mississippi river.

The following papers will be read at the meeting:

"Cokes and Oils for Water Gas Manufacturing," by Mr. J. H. Warnick, Omaha.

"Care and Maintenance of Water Gas Apparatus, by Mr. S. E. Linton, Jr., Sioux Falls.

"Gas House 'Terriers,'" by Mr. A. W. Borden, Hastings.

"Distribution Troubles," by Mr. E. M. Walker, Muscatine.

"Accidents and Damages," by Mr. J. B. Douglas, Philadelphia.

"Pressure Regulators," by Mr. Geo. A. Green, Cherokee.

"Inverted Lamps," by Mr. Walter M. Blinks, Kalamazoo.

"Management," by Mr. G. W. Clabaugh, Omaha.

"Relations of Companies to Gas Associations," by Mr. A. W. Zahm, Mason City.

"Advantages of Employees' Clubs," by Mr. H. B. Maynard, Waterloo.

"New Business Development," by Mr. B. C. Adams, Lincoln.

"Why the Gas Man Should Educate the Public, by Mr. Wm. E. Davis, S. Omaha.

The following reports of standing committees will be presented:

Manufacture.....Wm. J. Bertke, Chairman.
Distribution.....A. W. Borden, "
New Business.....Geo. S. Carson, "
Uniform Accounting .....G. I. Vincent, "
Construction..... ...J. H. Perry, "
Membership ..... Campbell W. Fair, "
Public Relations.....L. L. Kellogg, "

G. I. VINCENT, Secretary.

BRIEFLY TOLD.

HE MUST GET WELL.—This is the long and short. We cannot spare him. All of which unusual emotionalism springs from our knowledge that wholesouled, big hearted, handsome "Fred." B. Mueller, of the H. Mueller Manufacturing Company, is confined to a room in St. Mary's Hospital, in his home town of Decatur, Ills., as the result of an operation performed the 21st ult. While the operation, which was to relieve him permanently from an annoying ailment, that has caused him quite some discomfort in recent years, was not necessarily a dangerous one, it was nevertheless of a very painful character. Fortunately his otherwise excellent, robust, physical nature enabled him not only to go through the ordeal without any sympton of collapse, but largely lessened whatever degree of danger was attendant. He will surely be out by June 1st, like the roses.

THE OFFICE BUILDING OF THE PEOPLES GAS LIGHT AND COKE COMPANY.—The building recently constructed by the Peoples Gas Light and Coke Company, of Chicago (described in detail on other pages), aside from its magnificence and completeness, shows many departures from customary practice which are destined to become standard. Aside from the mechanical details concerning the office equipment, the lighting installation is one which does credit not only to the Company but to the industry as well. High pressure has been utilized to produce light sources of sufficient magnitude to be in keeping with the monumental fixtures which were necessary to fulfill the architectural requirements. This feature has received scant consideration in many glaring instances of both gas and electric fixtures, and the installation has an aesthetic as well as an economic value. Another departure of note is the use of indirect lighting fixtures for general office illuminating. This stands as the first installation of any size in which the named type of lighting has been used, and from the discussion which has been waged regarding same in the electric field, opinions seem evenly divided as to its ultimate success; but the Company's officials are to be congratulated over their courage in taking this radical step.

APRIL MEETING, PHILADELPHIA SECTION, NATIONAL COMMERCIAL GAS ASSOCIATION.—The regular stated meeting of the Philadelphia Section, National Commercial Gas Association, was held Tuesday evening, the 25th ult., in the United Gas Improvement Company's building, 1035 Market street, at 8 0'clock. Mr. C. G. Goeltz, President of the Section, was in the Chair. After the reading of the minutes by Secretary Bardsley, Mr. Goeltz introduced the speaker of the evening, Mr. W. F. O'Donnell, of the Advertising Department of the United Gas Improvement Company, the subject of whose talk was "Opportunity." The subject was treated from the standpoint of the gas salesman. Mr. O'Donnell stated that more than one-half of the 350,000 gas consumers in Philadelphia were credited with having gas ranges, while in reality most of these only had hot plates or some other small gas appliance. Nearly everyone of these consumers would buy a gas range if approached in the right way. A canvasser would never be successful if he is easily discouraged, and if he starts out in the morning and meets with a number of rebuffs, this should only spur him on to work the harder. The man who, because he was turned down in several houses on the same street, thinks luck is against him, and thinks he will leave this street and go call on "Mr. Blank," who lives 8 or 10 blocks away, where he has a good prospect, will meet with failure, as he will probably find that "Mr. Blank" is not in, and then he must retrace his footsteps, with a great deal of lost time. Mr. O'Donnell stated that the gas salesman, as well as the advertising man, must be a good "Hatchet Thrower." He must decide what he is aiming at, the mark he wishes to hit, and must take good aim, all of which is only accomplished by practice and study, and must hit the object aimed at. The advertising man has 26 weapons, the range of the alphabet. The gas salesman must map out his method of approaching a consumer, which must be original with himself. The lecturer cited several instances where salesmen who had made good, in good districts, had also sold as many goods in much poorer districts. Instances were also cited where canvassers had been promoted to positions as commercial agents and other position of importance. The discussion, which waxed rather warm at times, was participated in by Messrs. Elcock, Conard, Neff, Goeltz, Hunt and others. The question as to how advertising matter should be sent out to a prospective consumer, and how this should be followed up 3 or 4 days later by the salesman, was discussed. The subject of reports on new buildings, was also discussed. The question of forms to be filled out by the canvasser was gone into, and there were numerous expressions of opinion on this question. An announcement was made that on Saturday, May 6th, the Section would visit the plant of the Thomas Roberts, Stevenson Company, manufacturers of Fortune Gas Ranges, which inspection will be followed by a shad dinner.

CURRENT MENTION—

THE Missouri Firebrick Company, of St. Louis, Mo., is under contract to construct a new bench of 6's in the works at Pendleton, Ore., and will also put in a similar equipment at Walla Walla Wash.

THE properties of the Company at North Yakima, Wash., are to be rebuilt by the Gas Machinery Company, of Cleveland, O. The distribution system will be changed from high pressure to low pressure, and Messrs. R. D. Wood & Co. will construct for the North Yakima folks a storage holder up to retaining 1,500,000 cubic feet.

THE Western States Gas and Electric Company, of California, has notified the holders of its 6 per cent. collateral trust notes that these will be redeemed at the office of the Fidelity Trust Company, of Philadelphia, June 1st next. Upon that date interest will cease and holders will receive 101 per cent. for each $100 and accrued interest to said date.

WRITE to Mr. Charles Rodriguez, Secretary of "The Booster" Club, of Scranton, Pa., for a copy of its "official roster," or otherwise named "The Booster," dated April 25th.

WE are in receipt of a copy of the new catalogue describing the gas apparatus and gas appliances manufactured by the American Meter Company, from its 11th avenue and 47th street headquarters, this city. This type of reminder is the first one issued by the Company in several years, and it surely does credit to its compiler, Manager C. H Harrington. When Mr. Harrington was appointed to this responsible position we declared he would "make good," and he certainly is doing so.

ELSEWHERE we note that Messrs. R. D. Wood & Co. were to build a big gasholder at North Yakima, and thereto we may add that they will also construct a 2,000,000-foot vessel at Hartford, Conn., and a 300,000-foot one at Lewiston, Me.

AT the annual meeting of the United Gas Improvement Company, which was presided over by Mr. C. Stuart Patterson, in the absence through illness of President Thomas Dolan, the following retiring members of the Board of Directors were chosen: Samuel T. Bodine, Thomas Dolan, Randal Morgan, Clement A. Griscom, Rudulph Ellis, William Wood and M. L. Clothier; the Directors subsequently named Mr. Dolan as President. The cheer that went up when it was announced that Mr. Dolan would certainly recover rather strongly proved that Mr. Dolan is pretty well liked by his close business associates.

THE amount paid into the city treasury of Providence, R. I., by the Providence Gas Company for the quarter ended March 31, on royalty account, was $324,818.26. In the like period on similar account the payment by the Narragansett Electric Lighting Company was $267,994.29.

THE State Corporation Commission, of Virginia, has granted a charter to the Rosslyn Gas Company. The Company, which has been in successful operation for quite some time, has the following officers: President, D. S. McCall; Vice-President, H. W. Finney; Treasurer, W. T. Weaver.

THE Newburgh (N. Y.) Light, Heat and Power Company has been succeeded by a corporation to be known as the Central-Hudson Gas and Electric Company. It represents a consolidation of these Companies: Newburgh Light, Heat and Power, Poughkeepsie Light, Heat and Power and the Hudson Counties Gas and Electric. The Public Service Commission assented to the details of the merger.

MR. JAS. C. TURNER has been appointed Superintendent of the North Adams (Mass.) Gas Light Company. This leaves Mr. F. B. Briggs free to supervise the electric division of the enterprise.

[Communicated.]

The Building of the Peoples Gas Light and Coke Company, Chicago.

The new home of the Peoples Gas Light and Coke Company, Chicago, located on Michigan boulevard and Adams street, facing Grant Park and Lake Michigan, was designed for office purposes exclusively, and embodies all modern features calculated to make it most attractive and desirable for office purposes.

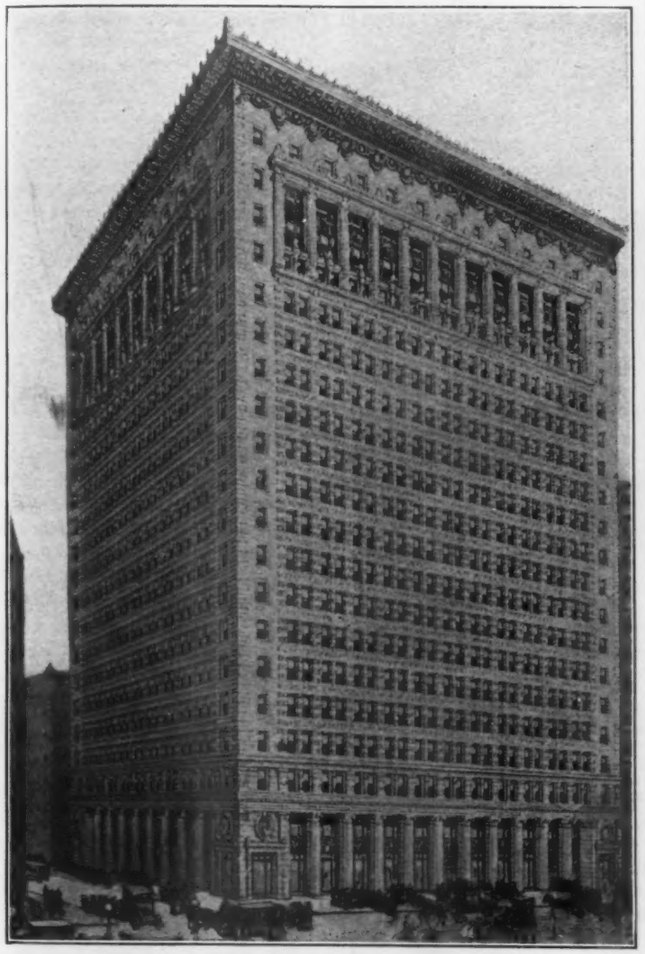


Fig. 1.—Exterior.

It occupies a frontage of 196 feet on Michigan boulevard and 171 feet on Adams street, rising to a height of 270 feet from the sidewalk to the acroteriun, containing 20 stories and basement, with a sub-basement for the necessary mechanical appliances. It was built primarily to furnish a suitable home for the Peoples Gas Light and Coke Company, and it was the aim to make it one of the most perfectly equipped office buildings in the country.

The exterior is of granite and terracotta construction, the interior is of East India mahogany, white marble and bronze. In its center is a central light court, 60 by 70 feet in area, which extends from the 2d floor to the 17th floor, above which the area is increased to 98 by 76 feet, open at the top, thus insuring excellent light and ventilation to the inside offices.

The Company occupies the greater part of the main floor as its main office; the 2d floor is occupied by the collection, application, inspection and order departments. The 15th floor is used by the bookkeeping department. The 16th, 17th and a portion of the 18th and 19th floors are occupied by the executive and engineering departments of the Company. A part of the 20th floor is sub-divided into a luncheon and resting room for the employees.

All the drinking water distributed throughout the building is thoroughly sterilized by means of an automatic, gas-fired boiler, located in the sub-basement, where the water is brought to a temperature of 240°, then is passed through a condenser and so on through cooling coils to the refrigerator coils, thence to the different drinking fountains located on every floor.

In the basement is a large exhibit room, connected to the main office by a broad and handsome marble stairway. In it can be found all the up-to-date gas burning appliances that are on the market, appliances that embrace everything from the smallest Bunsen burner to the largest hotel ranges and industrial appliances, and from an ordinary open flame burner to the most magnificent chandeliers and art glass domes procurable.

The lighting equipment throughout the building stands forth as an everlasting monument to the art of artificial illumination through the medium of gas, for the equipment of this building throughout with gas consuming units has opened up a new and profitable field for the gas companies all over the country.

Fig. 2.—Exterior Night View.

The sidewalk around the building is brilliantly illuminated through the medium of 20 high pressure lamps, that are equipped with one mantle which measures 4½ inches long by 1 inch in diameter. These lamps are inclosed in handsome, ornamental iron brackets, weighing 367 pounds each, and fastened to the building between each of the large granite columns that surround the building. They set back from the building line and do not project over the sidewalk like other installations. Setting them back from the building line gives the impression of concealed lighting, and also answers the purposes for which they were designed; that is, to illuminate the columns and the front of the building the same as they are iluminated by daylight, thus showing off the beauty of the lower part of the building the same at night as in the daytime. These lamps are operated by a specially equipped booster system, installed in the sub basement, that will be explained later. There is a row of bulls'-eyes around the second floor, and around the 18th floor is a row of lamps, as well as a row

Fig. 3.—Main Floor Night View.

around the top of building, illuminated at night for an ornamental effect.

The main floor of the gas office is brilliantly illuminated through the medium of twenty 1-mantle, high pressure lamps, inclosed in

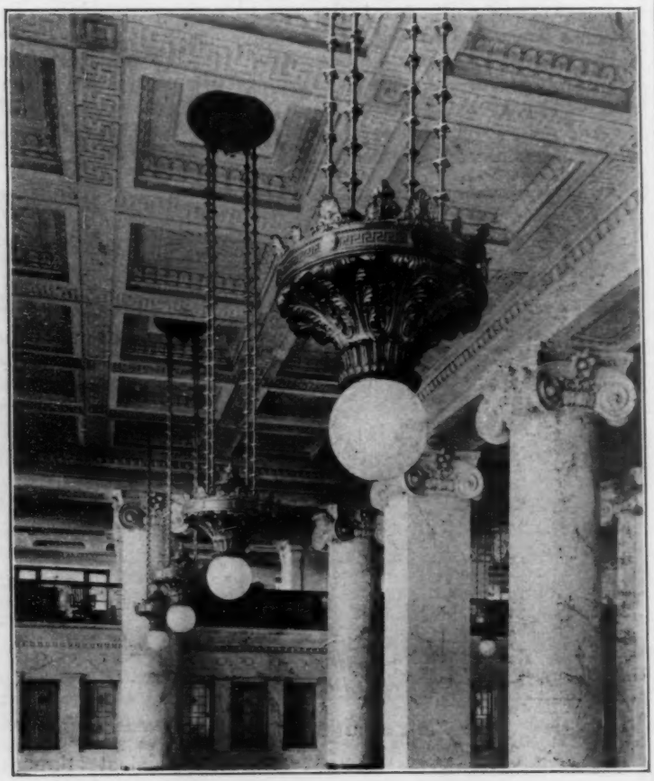


Fig. 4.—Detail of Fixtures, Main Floor.

ornamental bronze fixtures, suspended from the ceiling by 4 stems incased in ornamental bronze spools. They are hung 18 feet above the floor; and, to get some idea of their massiveness, imagine a fixture 36 inches in diameter, weighing 504 pounds each, suspended 12 feet below the ceiling. These lamps are so located that they give a perfect distribution of light over the area they are intended to illuminate.

They not only evenly illuminate the working plane and floor beneath them, but also the ceiling and side walls, so as to come as near daylight illumination as possible with an artificial illuminating unit.

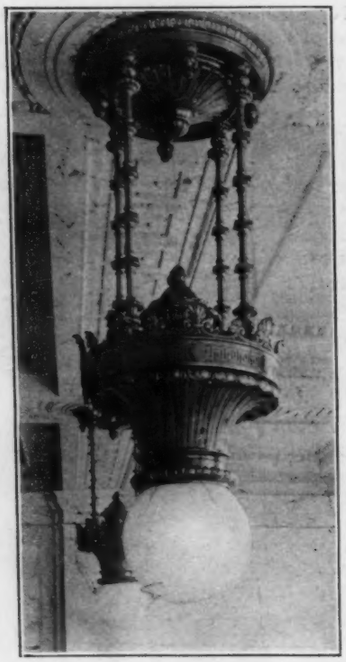


Fig. 5.—Fixtures, Mezzanine Floor.

In addition to these fixtures there are four, 1-mantle, high pressure, arc lamps inclosed in ornamental bronze fixtures, hung under the mezzanine floor. These fixtures are not quite as large as the others. They weigh 214 pounds each, and are suspended the same as the others by four ornamental stems.

In the center of the floor, or in the court, are 10 large candleabras, evenly spaced around the duplicate bills' counter. The candleabras are 11 feet high and weigh 418 pounds each. They are equipped with 3 mantle burners on low pressure gas.

On each side of the main entrance to office are two more of these large candelabras, and suspended from the ceiling in the main entrance, is a 3-mantle, inverted arc, inclosed in an ornamental bronze fixture. This unit, like the candelabras, is on low pressure gas.

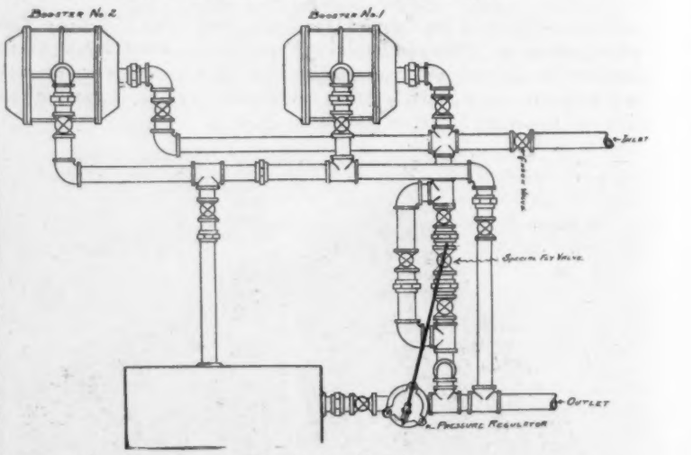


Fig. 6.—Booster Set.

The high pressure units are operated on gas boosted from 3½ ounces to 2 pounds pressure. The primary air is taken in at the lamp and not mixed with the gas at booster as is imagined by a good many people. The compression of this gas is actuated by 2 booster sets in the sub-basement. These booster sets consist of two No. 50 Connersville boosters, direct-connected to two 4-horse power motors. These sets are so connected as to eliminate the possibility of allowing the pressure to drop back to city pressure, inasmuch as they are connected to a panel board arranged so that if one machine should stop from any cause whatever, the other machine is automatically thrown in and takes up the boosting of the gas where the other machine left off.

Each lamp is equipped with a separate pilot light, so if both motors should go out of business the pilot lights would remain lighted on the city pressure; this is arranged for by a small governor located on each lamp, and a pilot leads from it to the mantle, thus eliminating the necessity of getting up to each unit to light pilots. This is only a precaution against an imaginary possibility, for the sets are so connected that, at any time a certain part needed to be removed, the part could be removed without shutting down the high pressure system.

The panel board is equipped with a special mercury gauge, which has a point of metal electrically connected on both sides of the mercury as shown in the following sketch:

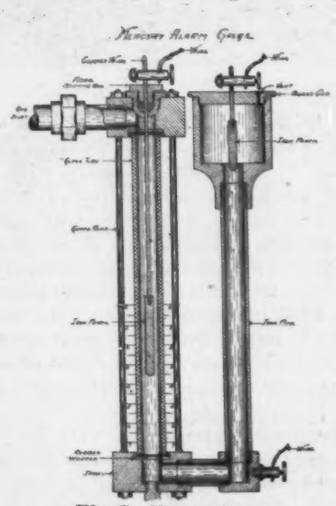


Fig. 7.—Mercury Gauge.

Fig. 8.—Standards at Stairway.

These points are adjusted so the mercury is about ¼ inch away from them on each side of the gauge. If the pressure should exceed 2 pounds on the outlet of the storage tank, the mercury would make a contact with the metal point, at the same time ringing a gong located in the engineer's office, notifying him that the booster needed attention. If the motor should stop, from any cause whatever, it would allow the mercury to drop back where it would come in contact with the metal point on the low pressure side of gauge, which would ring the gong in the engineer's office, at the same time automatically start-

ing up the other motor, thus insuring perfect operation at all times.

This mercury gauge is equipped with a small pet-cock on the low pressure side, so as to remove the pressure against the mercury when the gas is shut off to same, thus allowing the mercury to drop back to a level, without the necessity of breaking any joints, as is experienced in the common gauge. The round barrel on the high pressure side of the gauge is of ample size to hold all the mercury in the gauge, thus insuring the saving of the mercury if the pressure should become excessive from any cause, and eliminates scattering the mercury all over the floor.

The cages on the main floor are equipped with separate units and are under the control of the men who occupy these cages. Over the front counter is a bronze bracket, hidden from the public view and equipped with a 1-mantle, inverted unit, fitted with an opal concentrating shade and an opal inner cylinder which prevent the direct rays or glare striking the occupant on the eye. At the side of the cages the counter is illuminated by a bronze standard equipped with a 1-mantle, inverted unit, and an enameled concentrating shade. These units give sufficient illumination in the cages so that the high pressure units can be turned off, if necessary.

The main corridor to the building, which runs through from Michigan boulevard to Adams street, is illuminated by the means of fourteen 3-mantle, inverted units, inclosed in handsome bronze fixtures and typically suspended by 4 ornamental stems.

At the stairway, in the northwest corner of the main corridor, are 2 small bronze candelabras equipped with 2 upright mantles. They weigh 195 pounds each, and are an attraction in themselves, inasmuch as the chasing and design are the finest that was ever turned out. It actually took two first-class chasers 3 months to do only the chasing on these two candelabras.

The cigar stand in this corridor is illuminated by a 3-mantle, inverted unit, inclosed in an ornamental bronze casing, and is so constructed and connected as to act as a ventilating medium for the cigar booth. The soda stand, located a little south of the cigar booth in the west corridor, is illuminated from six 1-mantle, upright bronze brackets, evenly distributed on the side walls.

A tenant,. "The Peoples Trust and Savings Bank," is located on the corner of the 1st floor, and is illuminated by the use of 12 handsome 3-light brackets located on the side walls, 12 feet above the floor, which give an even distribution of light throughout the bank. The cages are equipped with lighting units the same as in the gas office, and are on low pressure gas.

All the units in public places on the first floor, as well as throughout the building, are turned off by a pneumatic valve operated from different locations, and by a small pump carried by the man who has charge of the lighting and extinguishing of the lights. On the sidewalls, near the lighting units which they cover, is located what is called a junction-box. These boxes control from 2 to 16 lights, and are equipped with a contact for turning the units on and a contact for turning them off; in other words, the pneumatic valves which are of special design and made for this installation, are constructed to operate on and-off by compression, not by compression and suction, like other valves that are on the market. This necessitated the running of a 2 tube system to each light and was adopted for several reasons, primarily because the valve is so constructed as to prohibit any possibility of an escape of gas through the tubing; also, if at any time one tube becomes stopped or broken from any cause whatever, the pneumatic valve could be operated from one contact point by compression and suction. The tubing used in this installation is what is known as No. 2 hydrocarbon tubing, and the fittings for making the connections were made especially so as they could be taken apart and put together at the will of the operator.

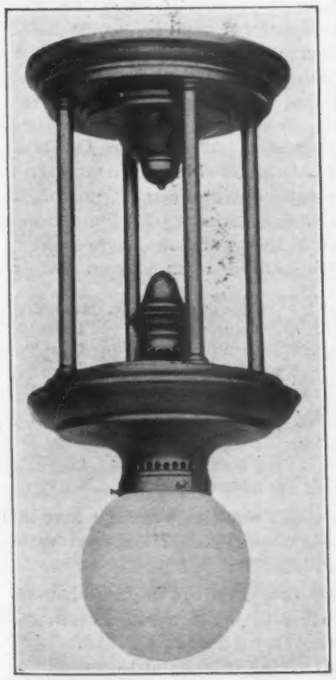


Fig. 9.—Corridor Fixture.

Fig. 10.—Toilet Fixture.

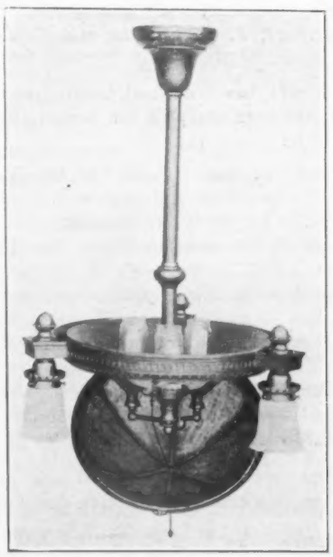


Fig. 11.—Indirect Lighting Fixture.

The second (or mezzanine) floor is perfectly illuminated through the medium of 86 3-light, ornamental bronze brackets, evenly spaced on the columns and sidewalls, and so constructed as to permit the lighting of 1, 2 or 3 lights as necessity demands, which units, as well as all inverted units throughout the building, are equipped with solid alba balls, and the lamps are so constructed as to take in the air over the lip of the balls. It might be mentioned here that all the special lighting units throughout the building are so constructed as to hide the openings in the shells or casings, where the primary and secondary air is drawn in, as well as the openings where the products of combustion are allowed to escape.

All the corridors throughout the building are illuminated by the use of handsome, 4-post, white enamel fixtures, equipped with one inverted mantle, and are operated on the long distance pneumatic control. These units are spaced 15 feet apart in front of the elevators and every 30 feet apart on the side corridors. They give an ideal illumination for corridor purposes.

The toilets located on every floor are equipped with single post, white enamel fixtures, similar in design to the corridor fixture. These fixtures, as well as the corridor fixtures, were made in white enamel, to correspond with the whiteness of the marble throughout all the corridors and toilets.

All the offices throughout the building are equipped with specially designed, indirect fixtures of a highly ornate character. These fixtures are equipped with three 1-mantle, upright burners and a white enamel reflector, and are so constructed as to permit the raising or lowering of the reflector so as to allow a certain amount of light to fall on the translucent art glass disk, thus giving a very artistic effect when the unit is turned on. This fixture is operated from a specially constructed ratchet valve that permits the operating of same by a chain dropped through the center of art glass disk.

Each office has one or more lavatory cabinets, according to the size of the office, and are illuminated through the medium of a bracket that is brought to the side of mirror with a 45° bend, and are equipped with a small 1-mantle burner. The top of cabinet is equipped with a special ventilator for the disposal of the products of combustion.

THE Pyrene Mfg. Co., of 414 East 32d street, New York city, claims that the Pyrene fire extinguisher has been used with great success by many of the large gas, electric light and street railway companies in the country. Tests have been made showing that an arc under extremely high pressure can be extinguished almost instantly, and gas burning from a 2-inch main at a normal pressure can also be extinguished in a few seconds.

[Official Report, as Furnished by the Secretary.]

PROCEEDINGS, SEVENTH ANNUAL MEETING, ILLINOIS GAS ASSOCIATION.

Held in the Auditorium Hotel, Chicago, March 15 and 16, 1911.

First Day—Morning Session.

The opening session convened at 10 o'clock, A.M., Wednesday, March 15, President A. S. Harrington in the chair.

The President—Gentlemen, you will please come to order. We have been a trifle slow this morning in getting together, but I trust at future sessions we will respond with greater promptness. Eight papers are to be read during the meeting, and to have them read and thoroughly discussed will require every minute of our time. Following the custom of last year, we have decided to dispense with an address of welcome, for I think we all feel as though we were welcome in Chicago. The first order of business is the

Report of Board of Directors,

which the Secretary will please read.

The Board of Directors begs to report as follows:

Two meetings have been held during the year, in addition to which considerable business has been disposed of by correspondence.

At a meeting, held in Chicago, June 2d, 1910, the principal business was the appointing of the committees as provided in the by-laws for the ensuing year. The following appointments were made:

Technical Committee.—Chairman, Mr. R. B. Harper, and Messrs. W. A. Baehr and R. G. Wallace.

Public Relations Committee.—Chairman, Mr. H. L. Rice, and Messrs. W. J. Knapp, A. S. Harrington and W. F. Booth.

Entertainment Committee.—Chairman, Mr. H. I. Lea, and Messrs. J. E. J. Mayer, F. J. Ely and C. E. Asendorf.

Nominating Committee.—Chairman, J. H. Eustace, and Messrs. H. L. Rice and H. L. Channon.

At a meeting, held March 14th, 1911, the Technical Committee reported that the following papers had been accepted for presentation at the meeting, March 15th and 16th:

"Chamber Oven Process of Coal Gas Manufacture," by Mr. J. C. Markley.

"Operation of the Ammonia Still," by Mr. A. F. Blossey.

"The Utility of the Pyrometer on Carburetted Water Gas Machines," by Mr. C. S. Heath.

"The Utilization of Gas for Domestic Purposes in Suburban Localities," by Mr. Lester Price.

"The Causes and Effects of a Public Utility Commission," by Mr. J. H. Roemer.

"Prevention of Accidents, by Mr. N. D. McPhail.

"Steam Economy in Gas Plants," by Mr. R. N. Davis.

"Industrial Application of Gas," by Mr. J. Dewey.

The following applications were received and indorsed, and are now favorably recommended to the Association—14 active and 3 associate:

Active.

Anderson, O. A.	Ikena, F. J.	Partridge, W.
Blanchard, S. D.	Kennedy, C. A.	Powers, J. T.
Bruce, A. C.	Kemper, F. E.	Snyder, D. W., Jr.
Childs, J. R.	Myers, F. C.	Thomas, F. W.
Heath, C. S.	Moroney, W. L.	

Associate.

Brendoux, E. A.	Gilman, G. P.	Lindsay, C. R., Jr.

The Public Relations Committee also reported to the Directors.

It was decided that a portion of this report should be read before the members of the Association, and that printed copies of the complete report be sent to every gas company represented in the Association.

The Treasurer's report was received as follows:

Receipts.

Balance in bank March 15th, 1910	$534.56	
1909 dues	55.00	
1910 dues	839.00	
Books	1.00	
		$1,429.56

Expenditures.

C. B. Strohn, expense	$42.75	
Printing and stationery	424.86	
Buttons	7.00	
Stenographer's fees	71.58	
Expressage	4.40	
Postage	67.45	
Telephone tolls	1.00	
	$619.04	
Balance in Union Nat. Bank, Elgin...	810.52	
		$1,429.56

March 14th, 1911.

The Committee appointed by the President to audit the accounts of the Treasurer has examined the same and reports that they are correct.

H. J. Mitchell, Irwin Rew, } Committee.

The President—Gentlemen, you have heard the report. What is your pleasure? Will somebody move that it be accepted?

On motion of Mr. F. E. Luther the report was accepted as read.

Election of New Members.

The President—Next in order of business will be the election of the applicants for membership. What is your pleasure in regard to the ballot?

On motion of Mr. Rice (seconded by Mr. Finn) the Secretary was authorized to cast the ballot of the Association for the election of the gentlemen proposed.

The Secretary cast the ballot as directed, and his report thereon was confirmed.

Public Relations Committee.

The President—The Public Relations Committee has a report which was intended to be read at this morning's session, but we will postpone it until after dinner. Next in order is the President's Address. Mr. Rew assumed the chair and President Harrington read his

INAUGURAL ADDRESS.

[For the text of the Address, see Journal, March 27, 1911, p. 595.]

The President resumed the Chair, and introduced Mr. J. C. Markley, of Chicago, who read the following paper on

CHAMBER OVEN PROCESS OF COAL GAS MANUFACTURE.

The type of chamber ovens to be described is that built by the firm of August Klönne, Dortmund, one of the older builders of coal gas apparatus in Germany. For the purpose of making observations and becoming familiar with this process, the writer visited a number of plants employing the chamber oven process and was given access to the records in a number of instances so that a portion of the data collected represents working conditions.

The firm of Klönne has developed the process, from an experiment made in 1892, when they built a setting of inclined ovens designed for carbonizing 5 tons of coal each chamber in 24 hours. This installation did not produce the results expected and was abandoned, the study of the principles involved being carried on, however, in connection with the firm's coke oven work. The first horizontal chamber oven was erected in Rotterdam (1908) at the Oostzeedyke gas works. The gas from the oven is handled independently through separate apparatus so that the results are accurately known. That Company is now building an extension to its works, the generating apparatus to consist of 10 horizontal ovens of 4 chambers each. The following works employing the chamber oven process were also visited:

Place.	Type of Oven.	No. Chamber.
Rixdorf Works, Berlin	5 horizontal	4
Koenigsburg, Germany	6 inclined	4
Frankenthal, Germany	2 horizontal	3
	1 horizontal	4
Dortmund, Germany	1 vertical	4
Padua, Italy	2 horizontal	4
	4 horizontal	2
Brussels, Belgium	2 horizontal	4
	2 horizontal	3

Horizontal ovens are also employed at Versailles, France, where there are two of the Klönne ovens of 4 chambers each. The special features of the process as finally developed include:

1. Carbonization of the coal in bulk and saving in ground space.
2. Saving in labor and elimination of night work, excepting for firing of generators, which is done every 6 hours by 1 man.
3. Moderate heat with attendant saving in maintenance cost.
4. Elimination of standpipe troubles and pitch in the hydraulic.

5. Good yield and heating value of gas, with freedom of carbon deposits in the chambers.

6. Liquid tar, low in carbon.

7. Mechanical means of regulating texture of coke.

These points will be brought out in detail, but first a description of the chamber ovens and the methods of operation are in order. The horizontal ovens are built on several plans to conform with local conditions, capacity required, etc.; that is, the ovens are built to contain either 2, 3 or 4 chambers each, and the chambers vary in length from 14 feet 9 inches to 19 feet 8 inches. The inside height is about 6 feet 6 inches and the width 16 inches. The charge per chamber is from 4 to 5 gross tons of coal, which may be carbonized from 18 hours to 36 hours, depending upon the demand for gas. The capacity is based on a carbonizing period of 24 hours, which makes the system sufficiently elastic to meet the changing conditions of send out.

Fig. 1 illustrates in a general way a horizontal section of a chamber oven plant. I found that several different designs of buildings were employed at the different works and also various modifications of coal handling apparatus. The buildings were usually of structural steel skeleton type, with brick filling on three sides. In one case the building consisted simply of a steel framework supporting the coal bunker and an arrangement of shelter roof for the protection of the workmen. In operation, the coal is crushed (when necessary) and conveyed to the bunker built over the ovens, preferably at one end of the stack.

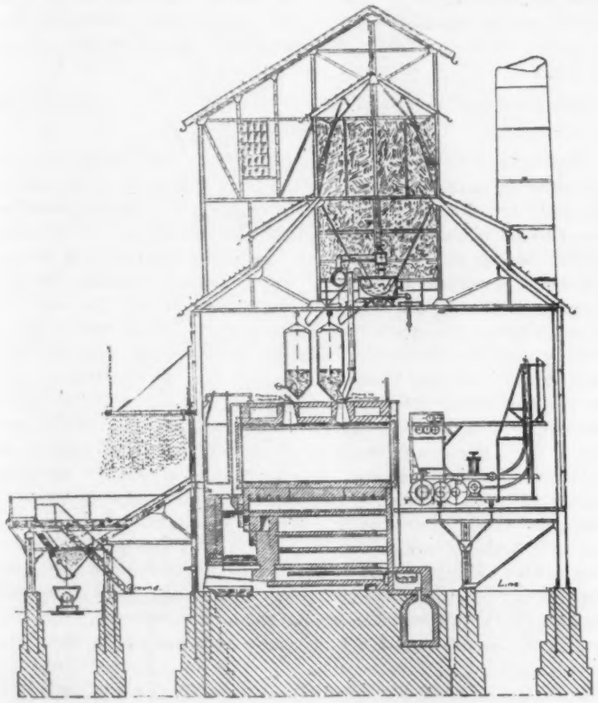


Fig. 1.—Section of Chamber Oven Plant.

The chambers have 2 or 3 (depending on their length) self-sealing charging mouthpieces on top, through which the coal is charged from overhead hand-travelling hoppers, the coal being spouted into these hoppers from the bunker. One man on top of the ovens attends to the opening of the mouthpieces and charging the coal.

On the operating floor in front of the ovens is an electrically-driven travelling machine operated by one man. This machine performs three functions: Opens the front door of the chamber, levels the coal in the chamber, after it is charged, and pushes the coke from the chamber after the carbonizing process is finished.

A third man is stationed at the back of the ovens whose duty is to handle the back doors of the chambers during the periods of charging and discharging. These door are quite heavy, being made of a solid steel forging, and are handled with a small travelling machine designed for the purpose. It is also the duty of this third man to charge the generators during daytime, which is done every 6 hours, with cold coke. A travelling hopper is filled on the ground and then hoisted to the proper level when it travels along the back of the ovens, the coke being spouted to the generators. The complete process of discharging the coke from the chambers and recharging with coal required, at different works, from 12 to 15 minutes for each.

After carbonization, the coke lies in the chamber in the form of a huge block, with an open space of about an inch next the side walls of the chamber. When pushed from the chamber by the machine, the mass of coke splits vertically in the center, forming 2 sheets or slabs about 7 inches thick, and when it falls onto the quenching floor it breaks up into long pieces, as shown in the accompanying photograph.

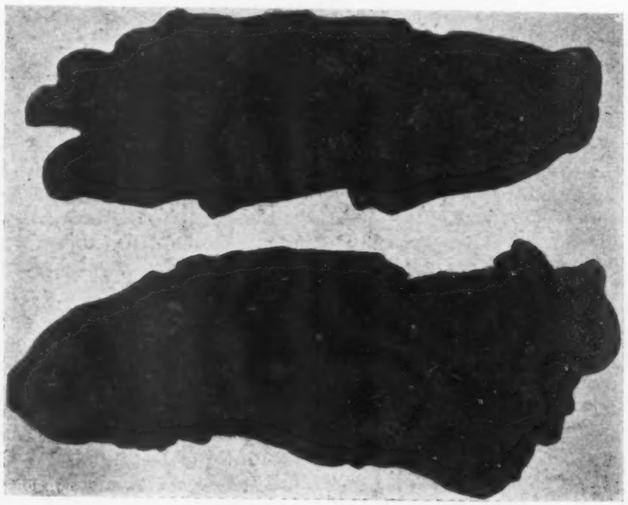


Fig. 2.—Chamber Oven Coke.

The material used in the construction of the chamber ovens is highly silicious, and the temperatures observed at the Rixdorf plant with a Lunette pyrometer were 2,000° F. to 2,140° F. in the combustion chambers. The heating does not continue to the top of the chambers, the gas space over the coal being the coolest part. These temperatures were the highest observed, lower temperatures being carried at other works.

At several of the works there were chambers that had been let down by reason of curtailed demand for gas. An examination of these cold chambers showed a very slight warp of the chamber tile, due to contraction, but no cracks. The contraction caused the joints to give somewhat and, after an oven was let down, the practice was to pick out the clay and point up the joints with a retort cement. In laying the chamber tile the joints are all broken, giving very little chance for leakage. In none of the chambers in operation could be detected any furnace gas leaks. In the experimental oven at Rotterdam, which was not in operation at the time of my visit, the chamber tiles were much larger and of a different mix than later adopted. The walls showed some cracks and the tile showed a decided warp. The common practice of clinkering is every second day; that is, once every 48 hours. One man does this work and it requires about an hour for each fire.

At the Rixdorf works the question of scurfing the chambers came up for discussion and a demonstration was made that was somewhat out of the ordinary. Practically all of the carbon forms on the floors of the chamber, although instances were noted where a slight deposit had formed on the side walls. A chamber was selected that had been in continuous operation for 8 months and the carbon on the bottom varied in thickness from about 1½ to 2½ inches. An ordinary garden hose was brought into play, and the floor of the chamber was flooded with water until it became black. Scurfing bars and sledges were used, the work being done at both ends of the chamber simultaneously, until the bottom blocks came up to heat again when more water was applied. The entire operation was completed in ¾ of an hour. In discussing this process later with the builders of the ovens, the Chief Engineer did not discourage the practice, but at the same time said that he did not recommend such heroic treatment. Later advice from the engineer of this works is to the effect that, although the practice of pouring water on the floor of the chamber is still continued, the quantity of water used is not so great as formerly. A long pipe, with small staggered holes drilled in the underside, is now introduced into the chamber and the water is applied to the floor in the form of a fine spray.

In rare instances a carbon deposit on the side walls may interfere with the discharge of the coke from the chamber, although but one such case was noted during the 6 weeks spent on the work. In this

case the pusher could not start the coke after several trials. The chamber was then left open until the next chamber was discharged, and during the 15 minutes sufficient air was admitted to burn the outer surface of the coke next the chamber walls. The coke was then easily discharged, and the carbon deposit was removed from the side wall in a few minutes.

The various advantages of this system of coal gas manufacture were brought out at the different works and the several engineers were, without exception, very enthusiastic over their results. Among the points observed particularly were the following:

1. *Carbonization of the Coal in Bulk.*—This practice seems to be the tendency of late years. Even with horizontal retorts there are recent instances of better results being obtained by the use of heavier charges of coal and longer periods of carbonization, the object being to prevent the bulk of the gas from remaining in contact with the highly heated surface of the retort. In the Klönne type of chamber oven, the top part of the chamber is the coolest. The furnace gases flow upward in the vertical flues, at either end of the chamber, to the top level of the charge, then taking a downward course at the center, as per Fig. 2.

2. *Low Cost of Carbonizing Labor.*—The questions of handling the coal to the overhead bin and the removal of the coke to the yard, naturally depend upon the type of coal and coke handling machinery adopted. The coke handling is more of a problem with the use of chamber ovens than with retorts, due to the large quantity of coke discharged at one time, but it can be easily handled by building the quenching floor on an incline in the form of one big pocket with smaller chutes extending below the bottom level of the quenching floor. These chutes may then be emptied at leisure. At all of the works visited the coke was quenched with a large fire hose, although various forms of quenching machines have been designed by the manufacturers of the ovens.

The actual labor for carbonizing the coal is performed during one shift of 8 or 10 hours, depending upon the size of the plant and the time of day selected for the richest make of gas. At night one man only remains with the ovens, and it is his duty to charge the furnaces once every 6 hours. Three men on the day shift can readily handle 24 chambers with a carbonizing capacity of 120 tons of coal per 24 hours. An extra man every second day would be required for clinkering the fires. This same complement of men is required for a plant of less capacity, but for a plant carbonizing 60 tons per 24 hours, the same men would be able to handle the coal to the overhead bin and the coke to the yard, provided, of course, the necessary coal and coke handling apparatus were provided.

In Frankenthal, Bavaria, where the Klönne ovens are installed, Sunday labor at the gas works is practically dispensed with. However, this is due to the large quantity of gas sold to the refiners of precious metals who shut down on Sunday, and the domestic gas demand can be supplied from storage.

3. *Moderate Heats with Attendant Saving in Maintenance Cost.*—The temperature observed, ranged from 1,900° F. to 2,140° F., only one of the several works carrying the higher temperature. The massive construction of the chamber ovens, considered with the fact that very little scurfling of carbon is required, and that only on the floor of the chambers, which are built up of blocks about 16 inches thick, would give promise of long life. Coke ovens, built along similar lines, have been in continuous operation for 6 years before renewals of carbonizing chambers were required. The coke pushing machine is of simple design and heavy construction, indicating low cost of repairs. The remaining portions of the mechanical auxiliaries, such as charging hoppers and machine for handling discharge doors, have very few moving parts to cause wear.

4. *Elimination of Standpipe Troubles and Pitch in the Hydraulic Main.*—No troubles of this nature were observed, and I was informed by several engineers that they did not occur. However, an auger is used in the standpipe, the same as in retort practice, a hand hole being provided at the lower end of the ascension pipe for this purpose. Tar drawn off from the bottom of the hydraulic is quite thin, the absence of pitch being due to the moderate heats.

5. *Good Yield and Heating Value of the Gas.*—The average yield per pound of coal from the chamber ovens is not particularly remarkable, excepting when the quality of coal used in Germany is considered. English coals are used to a great extent, and often mixed with German coals, the former being a trifle less in cost. These coals contain from 27.5 to 33 per cent. volatile. One is impressed with the uniformity of the yield at various works. At the Padua plant the average yield (corrected) for a period of 7 months during 1910, was 5.14 cubic feet per pound of coal, as compared with a yield of 4.46 cubic feet per pound of coal during the same period the previous year with horizontal retorts and the same grade of coal.

The coal used was a mixture of "New Bolton" and "Holmside," English coals of 32.2 to 33 per cent. volatile. At the Rixdorf works, using a mixture of English coals, "Lambton" and "Hebburn," and "Dubensko" from Silesia, the yield for the month of July, 1910, was 4,956 cubic feet per pound corrected. The volatile matter contained in these coals is something less than the "New Bolton" and "Holmside," viz.: "Lambton," 27.5 to 29.95 per cent.; "Hebburn," 29.9 to 31.8 per cent.; "Dubensko," 33.35 per cent. The proportions of the mixture were 75 per cent. English and 25 per cent. German coal.

Very little attention is paid to candle power at any of the works, but the calorific value is watched very closely even in the smaller plants. At a number of places were employed the Junkers' automatic calorimeter, containing a chart on which is automatically drawn a curve, indicating the heat units of the gas every instant during the 24 hours. The principle of this automatic instrument is based on the formula:

$$\text{Heating value ("H")} = \frac{\text{amount of water ("W") } \times \text{ increase of temp. ("T")}}{\text{amount of gas ("G")}}$$

The value of W-G is kept constant, and by this means the increase in temperature of the water, as the only variable figure, represents the scale for the heating value of the gas. The exact proportion of water to gas is obtained by coupling a gas meter to a water meter of special design, thus the amount of gas per revolution of the meter represents a certain amount of water flowing through the calorimeter. A thermo-electric pile is connected to the calorimeter through which the stream of cold and warm water flows. The construction of the thermo-elcctric pile is based on the principle that in two metals, soldered together at one end, an electrio current is generated if the soldered joint is warmed to a higher degree than the free ends. The tension of current thus generated is in exact proportion to the difference in temperature, consequently the heating value of the gas is also in proportion to the tension of the electric current generated, The tension of the current is measured by means of a very sensitive milli voltmeter. The milli-voltmeter is provided with a caloric scale, divisions of which are fixed after having found the proportions of temperature increase to the tension of the current. The pointer of the milli-voltmeter is provided with a pen which draws a curve on the chart reading directly in calories. Where this instrument is used it is checked up once each week with the ordinary calorimeter.

6. *Liquid Tar, Low in Carbon.*—A sample of tar obtained at the Rixdorf works, and submitted to an American chemist, showed the following analysis:

Specific gravity	1.1359 at 68° F., or 20° C.
Water	2 per cent.
Free carbon	3.31 per cent.
Tar acids	6.1 "
Naphthaline	7.6 "

Distillation.

Distillates.	Amount. Per Cent.	Spec. Grav., 68° F.
to 110° C (water).	2	.....
110° to 235° C	12	1.0016
235° to 250° C	8	1.023
250° to 270° C	3.5	1.039
270° to 300° C	6	1.051
300° to 315° C	2	1.069
315° to 360° C	12	1.092
Residue (by weight)	54	1.288

The residue above 360° was a moderately hard pitch; softening at 55° C. (131° F.) and melting at 70° C. (150° F.).

The naphthaline is reported as solid naphthaline pressed from its oils. The total amount of naphthaline bearing oils is the sum of the distillates from 110° to 270° C. or 23.5 per cent. The distillates from 300° to 360° were solid anthracene oil. A sulphuration test was made with positive result. This indicated the presence of a small amount of paraffines or paraffinoids. This often occurs with certain coals, and does not necessarily mean that oil tar is present. The free carbon is very low for a coal tar. The amount of tar acids is moderate. The specific gravities of the various fractions are somewhat lower than for similar fractions of coal gas tar and would seem to indicate the tar to be a coke oven tar. The amount of solid naphthaline is only fair. Some tars contain 15 to 20 per cent.

The residue above 360° is an excellent pitch and, being 54 per cent. of the whole, means that 45–46 per cent. of this tar can be distilled and a good quality of pitch remain.

7. *Mechanical Means of Regulating Texture of Coke.*—An ingenious device is employed in the construction of the front and back lids of the chambers, which permits somewhat of contr lling the hardness of the coke to meet the demands of the market. The arrangements consists of an inside shield which is hinged to the lid or door by heavy links which are marked *L* in Figs. 3 and 4. When a very hard coke is desired, pins *P* are inserted under the latches, which compel the shields to remain stationary, thus exerting pressure on the coal when it begins to expand with the first heating. This condition is shown in Fig. 3. Should a soft coke be desired, the pins are not inserted and this permits the shields to ease back with the full expansion of the coal, as in Fig. 4.

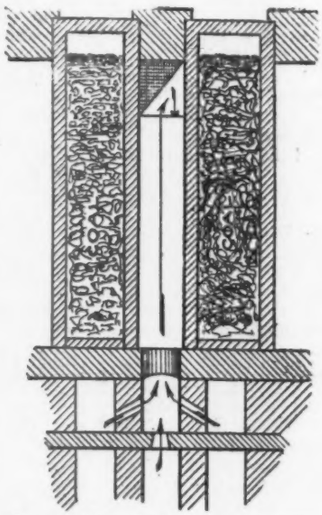


Fig. 3.—Klonne Type of Chamber Oven.

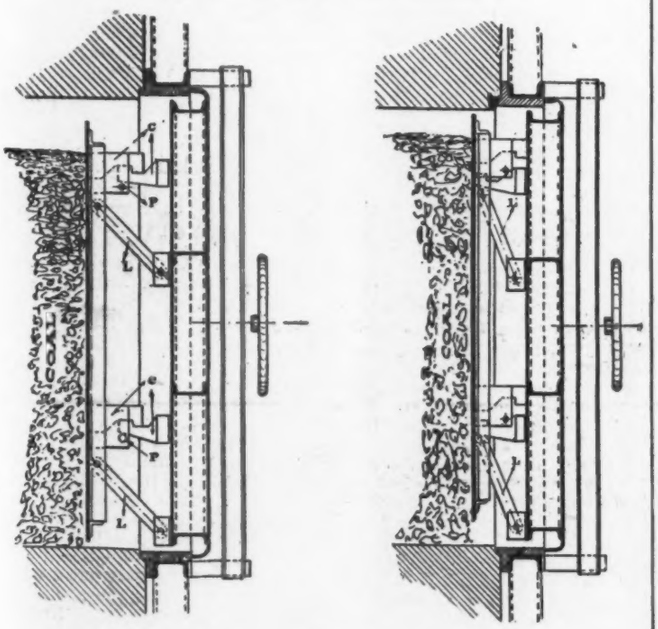


Fig. 4.—Front and Back Lids of Chambers.

There is also a provision for allowing the shields to give but part way with the expansion of the coal, thus exerting somewhat less pressure than in the first instance, producing a coke of medium hardness. This is shown in Fig. 5, and consists of a cast iron block *A* which may be inserted under the top latch *C* and held in place by pin *B*. When the coal has expanded a certain amount and the shield is pushed toward the lid or door, the block *A* comes in contact with latch *D* and, therefore, cannot move any farther. Pressure is then exerted on the coal as it continues to expand. As an illustration of the texture of chamber oven coke as compared with retort coke from the same coal, the engineer at the Rixdorf works, Mr. R. Heine, gave me the following figures:

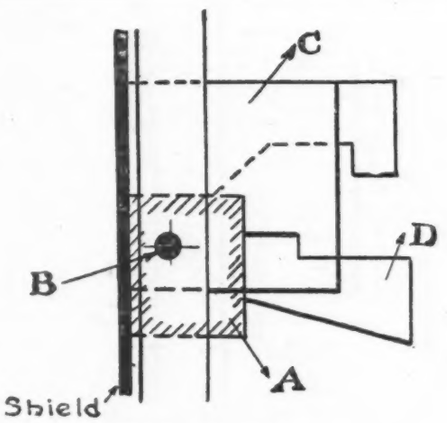
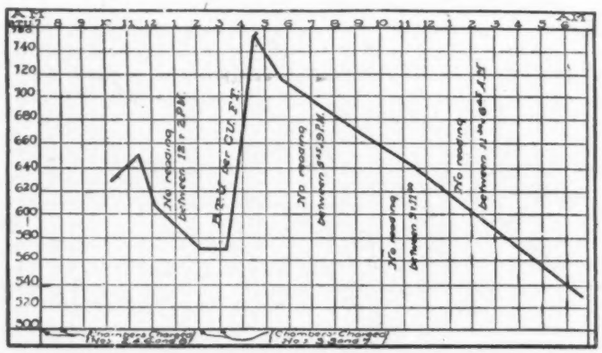


Fig. 5.- Expansion Stop.



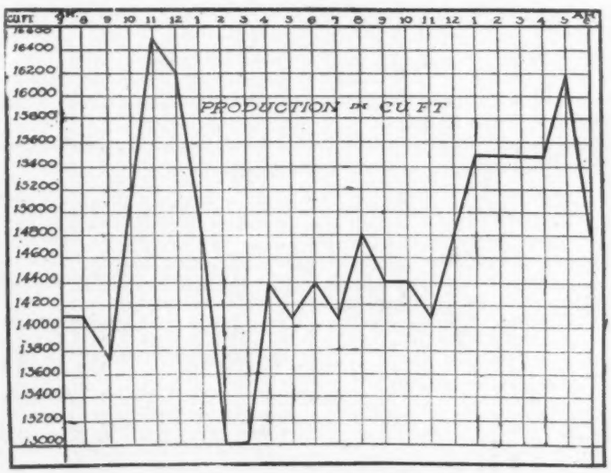


Fig. 6.—Results at Padua.

Weight of chamber oven coke = 37 pounds per cubic foot.
Weight of retort coke = 31 pounds per cubic foot.

Here the coal is allowed the full expansion as the coke is all used for domestic purposes.

Some interesting observations were made at the Padua plant, August 12 and 13, in company with Dr. Ott, of the Zurich works, and Engineer Westhofen, of Dortmund, with the following results:

6 A.M., August 12, to 6 A. M., August 13.

"Holmside" (English) coal charged..	70,560 pounds.
Gas produced, corrected.....	351,840 cubic feet.
Gas produced per pound of coal	4.98 cubic feet.
Average heating value, gross.....	633 B.T.U.

Analysis of "Holmside" coal:

Material.	Per cent.
Coke and ash.....	67.8
Volatile	32.2
C.....	82.04
H.....	5.00
O.....	5.38
N.....	1.36
S.....	1.52
Ash	3.36
Water	1.34
	100.00

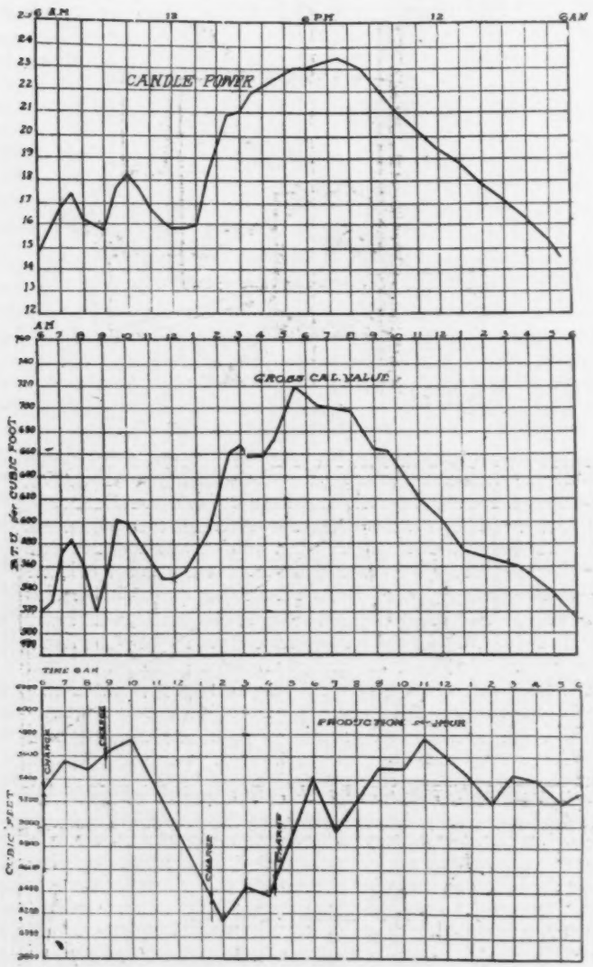


Fig. 7.—Results at Rotterdam.

Curves were plotted showing hourly production and calorific value and are fairly characteristic of the chamber oven process. It is noted that alternate chambers were charged at each period, viz: Chambers Nos. 2, 4, 6, and 8 between the hours of 7 and 8 A.M. Chambers 1, 3, 5 and 7 between the hours of 2 and 3 P.M. Eight chambers in all were in use. The production readings were taken from the station meter, while the gas for calorific test was taken before entering the holder. The following curves were furnished by M. Sissingh, Director of the Oostzeedyk Works, Rotterdam. However, no figures were obtained at this plant.

In conclusion, the thought is suggested that there are possibilities for the chamber oven process in America in utilizing local coals, or at least a mixture of local coals with Youghiogheny or Pocahontas when a better grade of coke is desired. With Youghiogheny coal only, better results should be expected than are being obtained abroad, due to the higher percentage of volatile hydrocarbons contained over that of the German and English coals.

Discussion.

The President—Gentlemen, we have listened to a very interesting paper. I hope that free discussion will be the result. Mr. Battin, have you anything to say?

Mr. Battin—I am not competent to discuss this subject, inasmuch as I have not had any experience with either coke or chamber ovens In fact, I have never seen a chamber oven and do not believe there are any to see in this country. I have, however, made quite a study of the coke oven, visiting and carefully inspecting the installations of different types in this country, and have followed the results obtained by the chamber oven abroad. It is a new thing, and having received nothing excepting favorable reports regarding it, we are naturally very much interested in it; but, like many other things that work abroad, I am afraid, when brought to this country, we will find conditions that will have to be met before they will be entirely successful. However, we know that the ordinary coke oven has been successful on this side. Of course, the case of the ordinary coke oven is somewhat different, because they are always operated for the coke particularly. They use mixed coal and have to be very careful about the mixing in order to get the right character of coke. I do not know what the results would be if they used a mixture of Youghiogheny coal or of Youghiogheny coal straight. The chamber oven naturally would not do for small works, but for large ones it certainly ought to be considered carefully. They probably would not come in very handy where you are going to make an extension to a coal gas plant that you already have, for the operation requires such a different time for charging, and so on, that the two would not work very well together. The advantage of this particular type of oven of course, is one gets more gas and less coke for sale. In fact, I have had coke oven people, who are in the business of making coke, tell me that was one of the advantages, because you have less coke to get rid of. I know of instances where retort oven coke and ordinary coke are offered for sale in the same town, and frequently you will find that the gas house coke sells where the retort oven coke will not. Of course, that may be, for the small coke is left from coke made for metallurgical purposes. I do not see any advantage in the use of a building with only three sides, or of any building at all other than you can get with retorts under the same conditions; but here in America we have always seemed to think it necessary to build a house to hold a retort setting, and probably the same thing would be done with the chamber oven. Climatic conditions have a very important effect on coke ovens, the production of gas being considerably cut down by a strong wind blowing in a certain direction against the setting. I do not see an advantage in the shifting door. A coke oven door should be as simple as you can get it, and this arrangement of levers I hardly think is such that, with a compression of coke of about 6 inches in a length of 20 feet, it would make much difference in the texture of the coke. However, Mr. Markley can no doubt tell us what the effect really is in that case.

The President—Does anybody else desire to discuss this paper? It is surely provocative of new thoughts.

Mr. Hartman—I have brought along a model of a combination Kopper's gas oven and coke oven, or one that can be used either as a gas oven or coke oven, which I will discuss further later. I want to congratulate Mr. Markley on this interesting paper, since it deals with a subject that has recently stirred up a great deal of interest both in America and abroad. In the last few years, gas engineers have been active along carbonizing lines, and the technical journals have been full of articles on vertical retorts, or chamber ovens, or gas ovens. We call them gas ovens in contradistinction to our coke ovens. The construction is very similar, and it is a better term to my mind. Germany has, as usual, led the way in this investigation. There they have in use several different types of gas ovens, some of the most prominent of which are the Munich, the Klonne and the Koppers. I have brought with me a few photographs showing our Vienna plant (our latest installation of Koppers gas ovens), and I will pass these around. There is a short description on the back of each. These Vienna ovens were put in operation about three months ago and have proven very successful. They receive a charge of 12 net tons of coal per 24 hours to each oven. The fuel consumption is less than 10 per cent. of the coal carbonized, this fuel having an ash content of 11.4 per cent. The results from this installation have been so satisfactory that the German office of H. Koppers has, since this installation was put into operation three months ago, contracted for 28 additional ovens to be erected alongside of this installation. Also, we are building an installation in a suburb of Vienna of 72 12-ton gas ovens, according to this same design. The gas from these ovens will also be used for distribution in the city of Vienna. This model is our combination oven. That is, it is an oven which may be operated as a coke or gas oven, depending on the condition of the coke market. This model will impress you with the similarity between our coke and gas oven. A gas oven is a coke oven modified only slightly in construction, in order to adapt it to the peculiar needs of gas companies. A coke oven uses about ⅓ the gas evolved from the coal to heat the ovens, while a gas oven is heated by the combustion of producer gas, the producer gas being generated in a separate gas producer installation. The producer gas is made from the coke breeze and small coke screened from the coke discharged from the ovens. Thus, by using this oven as a gas oven, you get a maximum yield of gas from the coal, and only a little more coke than in ordinary retort practice. I say a little more because our fuel consumption is less than in retort practice. You will note that we have no recuperators in this construction. On the other hand, we have regenerators, which is one explanation of our fuel economy. In the steel, coke and glass industries, regenerators have come into very general use. We are all more or less familiar with the "Siemens Regenerative System." Recuperators, as you know, depend for their efficiency on thin walls between the waste gases and the air to be preheated. Thin walls in firebrick construction are unavoidably associated with leakage. You will note from this model there is, between the gas regenerators and the air regenerators, a solid wall 13 inches thick. We thus avoid leakage. That is, this wall here (indicating on model). This pair of regenerators will preheat the producer gas; the next pair will preheat the air; the next pair the producer gas, and the next pair the air. The producer gas coming up the regenerator passes through into the vertical flue between the ovens; the air coming up through the regenerator meets the producer gas and burns in the vertical flue, and that takes place in each of the vertical flues all the way throughout the length of the oven. There is a 13-inch solid wall between the air regenerators and the gas regenerators. Between each pair of the latter there is only a 4-inch wall, but that is not so important because leakage there would not produce any combustion or loss of fuel; simply gas and gas or air and air. Also, by means of our large volume of checkerbrick, we are able to run with a temperature of waste gases, in the Vienna installation of only 220° C. In order to keep up the efficiency of our regenerators it is necessary that we prevent any accumulation of dust on the checkerbrick. Therefore, our producer gas is thoroughly cleaned before passing over to the regenerator. You see this is very easily done because the fuel gas being made in outside producers is scrubbed and thoroughly

cleaned before it passes over to the ovens. Our first 5 or 6 installations of gas ovens in Germany and Austria were built with producers below the ovens, and with recuperators; but we now feel that we have something better. Our Vienna installation, built similarly to this model, is showing so much better results that we no longer advocate the older type of construction with recuperators. I noticed recently, in the *Journal fur Gasbeleuchtung*, of February 4, 1911, an illustrated article on the Padua plant of Klonne gas ovens, the plant described in Mr. Markley's paper. In this article are given fuel results and the general results of a test run on the plant, including the cost of labor. The fuel given is 17 per cent., which, when reduced to fuel and coal free from water, mounts to 14.9 per cent. Our Vienna installation was built on a fuel guarantee of 12 per cent., this fuel constituting coke breeze and small coke. It is operating on less than 10 per cent., including the fuel used to generate steam for the producers, for the suction fan, and for the engine operating the revolving grates of the producers. This low fuel consumption is, we believe, the lowest ever reached. We attribute it to the high efficiency of our regenerators, with clean checkerbrick and without any leakage between the air and gas. Another reason for this fuel economy is, no doubt, the fact that, with outside producers delivering fuel in the form of gas, uniform in quantity and quality, this gas being under stopcock regulation at each oven, there is undoubtedly a greater uniformity in heating, therefore, a low fuel consumption. Regarding fuel consumption, I think, we sometimes forget its importance. With coke at $4 per ton, a difference of 1 per cent. in fuel consumption is equivalent to 4 cents per 1000 cubic feet of gas made; while a difference of 5 per cent. is equivalent to 2 cents per 1000 cubic feet. Now, 2 cents is almost the total revenue per 1000 for tar produced from the coal, and it is very much more than the total generating labor with gas ovens. These few comparisons will help us to appreciate the value of fuel economy. Mr. Markley shows in his paper an installation of Klonne ovens, inclosed in a house. We do not advocate the construction of a building over gas ovens. As you will see from the model, and from the photographs, a gas oven installation is practically the same thing as a coke oven installation, in regard to the mechanical processes of the operation. We know of no coke oven installations which are under cover, even in Canada and other cold countries; and I wish to say that we have never noticed any effect of the weather upon the ovens. The gas oven contractors boast of the small number of men required to operate the ovens; this hardly seems consistent with the construction of a house to protect the men, if it is for that it is built. I have also brought a photograph of our Innsbruck plant—Innsbruck is located in the Austrian Alps, and is exposed to very severe climatic conditions. The manager of the gas company in that place reports there is no inconvenience whatever from the fact that the ovens are out in the open. Mr. Markley gives an analysis of coal tar from one of the Klonne plants; and I wish to say in this connection that this analysis does not show anything remarkable in coal tar from gas ovens. The tar from our Innsbruck ovens has less than 2 per cent. of free carbon. I have with me a table showing the analysis of samples of tar taken from various European plants of vertical retorts, Klonne and Koppers gas ovens, and some from an installation of through horizontals in America, which analysis I shall be pleased to show to anyone interested. A gas oven installation is exceedingly flexible as to output. The coking time may be 24 hours. or, if it is desired, the supply of fuel gas may be checked and the coking time lengthened to 36 or 48 hours, provided the gas consumption falls off. On the other hand more fuel may be turned on and the heats raised to coke the charges in less than 24 hours. In doing this there is no danger of melting any of the material, for the best quality of silica material is used in all parts exposed to high temperatures. To provide for the varying coke demands, it is practicable to use a high volatile coal in some of the ovens, thus making a soft, domestic coke, whilst some of the other ovens may be charged with a lower volatile coal, making a coke better adapted for metallurgical purposes. With a gas oven you are not restricted to any particular kind of coal. You are guided in your choice of coal by the quality and quantity of the product you require, not by the suitability of the coal to its travel in the retort or the discharge of the coke. A pusher machine takes care of the coke discharge without any hesitation. Fine coal is not objectionable, and in this connection I wish to cite the fact that, in our coke oven installations, the coal is all crushed so that 85 per cent. of it will pass through an 8-inch screen. This model represents 4 combination ovens, each oven with a capacity of 9 net tons of coal per charge. You will note the location of the gas space: The top of the coal charge is at this point, and the top waste gas flue is down there, so that the gas is not exposed directly to any heat. Again, between the gas regenerators and the air regenerators, we have a 13-inch solid brick wall, absolutely preventing leakage. All parts of this construction are accessible for inspection, as you will see through the sight holes and through the covers over the vertical flues. The oven construction is very strong, as the walls are braced by the vertical flue walls. I wish to invite you to visit our Joliet coke oven plant, which has been in operation for 2½ years. We have no gas oven plants in operation in this country, but if any of you are going abroad I hope you will see the Vienna installation, which is the latest thing in gas ovens. With reference to the scurfing of gas ovens, I was very much surprised on reading of this trouble. We have never had to delay an oven for scurfing. Our report from the operators of the Koppers' gas oven plants abroad state there is no scurfing, and the Koppers' coke oven plants abroad and in this country do not know what scurfing is. Mr. Markley mentions the advantage of charging the ovens only in the daytime, and at times most needed to give a temporarily high production and high quality of gas. I wish to read in this connection, from a report by the Manager of the Innsbruck plant of Koppers' gas ovens. There the charging is all done in the daytime and none on Sundays. He says: "Very little fluctuation in production and quality of gas in chamber oven operation. Daily differences in heating values of the city gas tested at the outlet of the holder amount to only from 17 to 22 B.T.U. per cubic foot. Pushing the coke does not offer any difficulties. There is no formation of graphite and no stoppages in the ascension pipes. No difficulty with hard tar in winter." Again: "The gas produced varied in calorific power from 393 to 640 B.T.U. per cubic foot; but the different grades mixed well in the holder and the daily variations of the gas sent out were no greater than 23 to 24 B.T.U." I think that is all, Mr. President.

The President—Gentlemen, we are certainly indebted to Mr. Hartman for the able and thorough manner in which he has discussed his paper. Would anyone else like to ask Mr. Hartman about his model?

Mr. Houghton—I would like to inquire what temperature is carried in the combustion chamber.

Mr. Hartman—The temperature in the heating flues where the combustion takes place is about 1,000° to 1,100° C. That would be about 2,000° F. The silica material will stand 3,000° F.

The President—Is there any further discussion of Mr. Markley's paper? If not, we will ask Mr. Markley to close the discussion.

Mr. Markley—I agree with Mr. Battin that the operation in Germany might be altogether different than in the United States. We might encounter problems over here that they would not over there, but in the coke oven process I believe they are carbonizing Youghiogheny right along. I happen to be somewhat familiar with the coke oven plant where Mr. Andrews uses Youghiogheny coal, and I have never heard him speak of any particular trouble. The question of fuel necessary to heat the ovens I think depends altogether on the quality or kind of coal you were carbonizing, also on the amount of ash contained in your coke. I hardly believe any abstract test will stand as an example of what an oven would do. For that reason I did not present any fuel figures. All I had was the result of certain tests, and the other data that I brought came from the records of the companies, which covered a period of several months and represented actual working conditions. The amount of fuel used was simply estimated, and there was such a variation in it that I did not consider it worth very much to take an account of it. I do not know of anything else that I can say on this question.

The President—I think I express the sentiment of most members here, in fact, of all of them, when I thank Mr. Markley for his paper.

Mr. Bredel—As to the Padua instance cited, I would like to read the entire result. Here are the figures for ½ year, 1909 and 1910; in 1909 they had horizontal benches; in 1910 chamber ovens:

Results Obtained at Padua.

	Jan. to July, 1909.	Jan. to July, 1910.	Difference.
Coal carbonized, net tons	9,992	8,900	— 1,092
Gas made, 1,000 cubic feet	92,366	93,194	+ 823
Generator fuel, net tons	2,012	1,550	— 462
Sulphate of ammonia, pounds ...	109,600	134,440	+ 24,840
*Total labor, entire plant	$13,673.96	$8,577.42	—$5,096.94
Cost of electric current.....	....	333.96	333.96

*Separate figures of labor cost, carbonizing plant alone, were not obtainable.

The first column shows results for the first 6 months, 1909, operating recuperating benches with horizontal retorts. The second shows results for the corresponding first 6 months, 1910, operating Klonne chamber ovens. The above show the following results:

1. In 1910 1,092 tons less coal were used and 828,000 cubic feet more gas produced, or an increase of 230 cubic feet per ton, or 13.3 per cent.

2. A decrease in generator fuel of 462 tons, or of 102 pounds per 10,000 cubic feet of gas produced, or 23 per cent., based on make of gas.

3. An increase of 24,840 pounds sulphate of ammonia, or 38 per cent., figured per ton coal carbonized.

4. A decrease of $5,096.54 in labor, or 39 per cent., based on labor cost of *entire plant* per unit of gas made.

5. Extra cost of electric current, $333.96.

Extract of article in German Gas Light Journal, Feb. 4, 1911, by Engineer Rochm Milano, Italy, about Klonne chamber ovens, Padua.

(To be Continued.)

Essential Factors in the Formation of Producer Gas.

The heading corresponds to the titling of "Bulletin No. 7," just issued by the Bureau of Mines. The authors (J. K. Clement, L. H. Adams and C. N. Haskins), detail an investigation of the chemical and physical processes that take place in the gas producer, in which they kept in view, not only the possibility of increasing the efficiency of the producer as a source of energy and the ensuing benefits to the public of cheaper power and greater utilization of low grade fuels, but also the application of the results to the problems of the boiler furnace operations.

In experiments. made by one of the authors at the Bureau's experimental station, it was found that the temperature in the fuel bed of the gas producer varied greatly in different parts of the bed. In order to ascertain the conditions of temperature most favorable to the

efficient operation of the producer, it became necessary to determine the temperature required for the formation of carbon monoxide and hydrogen.

Among other reasons for investigating the conditions for the reduction of carbon dioxide by carbon was that a small quantity of carbon monoxide is invariably contained in the flue gases of boiler furnaces, and it was hoped that means might be suggested of preventing its formation and the resulting loss in furnace efficiency. These investigations demonstrated that a very high temperature is necessary for the production of carbon monoxide from carbon dioxide and carbon. These are conditions, however, which argue against operating the fuel bed and the gas producer at extremely high temperatures, say, about 1,400° C.

A very hot fuel bed means that the gases will leave the producer at a high temperature, and thus lower the efficiency of the producer. The gain in capacity would, therefore, be accompanied by a loss in efficiency, unless the heat of the gases could be used for generating steam or preheating the air blast. A high temperature also favors clinkering. In the application of the results of these experiments to commercial producers and furnaces it will be necessary, of course, to consider the other questions which are involved.

Various explanations have been suggested to account for the presence of small amounts of carbon monoxide in the flue gases of boiler furnaces. Perhaps the one generally accepted by engineers is that the oxygen of the air first unites with carbon to form carbon dioxide, and that as this gas passes up through the bed it combines with carbon in accordance with the equation:

$$CO_2 + C = 2CO.$$

Assuming this to be the correct explanation, then the questions to be solved are, "What conditions favor this reaction?" and "What conditions will tend to retard it?" It has been shown by the authors that the higher the velocity of the gas and the thinner the fuel bed the lower will be the percentage of carbon monoxide formed. A heavy fuel bed in the boiler furnace would, therefore, favor the formation of carbon monoxide. Also, the greater the supply of air to a given depth of bed the less would be the percentage of this gas formed; therefore, with a hot fuel bed the formation of a small amount of carbon monoxide is inevitable. In order that this carbon monoxide may be burned to carbon dioxide in some way sufficient air must be added to the hot gases as they leave the top of the fuel bed.

The "Bulletin" also contains a chapter by Messrs. J. K. Clement and L. H. Adams, on "Effective Temperatures for Water Gas Generation." The results presented show that a high rate of gasification, combined with a high percentage of carbon monoxide and a low percentage of carbon dioxide and water, requires a high temperature in the fuel bed. The higher the temperature the better will be the quality of the gas and the greater the capacity of the producer. The use of large amounts of steam is inconsistent with the realization of high temperature, and is, therefore, to be avoided.

Although these investigations were undertaken primarily to determine the conditions governing the formation of producer gas, the results have an important bearing on the water gas process. They show that, although with very low rates of steam supply the decomposition of the steam may be complete at 1,100° C.; with higher rates of steam supply, such as are desirable in practice, a much higher temperature—1,300° to 1,400° C.—is required to obtain complete decomposition. The highest efficiency will be obtained by raising the temperature of the bed during the blast as high as is possible without injury to the producer. As the bed cools during the run with steam, the steam should be gradually reduced, and when the temperature has dropped to 1,000° C. the steam should be cut off.

The "Bulletin" is of a scientific character, and will be of interest to engineers engaged in gas producer and gas engine work. Copies may be obtained by addressing the Director of the Bureau of Mines, Washington, D. C.

Some Recent Developments in Gas Retort Bench and Chamber Oven Construction.—No. III.

[Prepared for the JOURNAL, by "DESIGNER."]

The most revolutionary movement by which the industry was stirred in recent years was the coming of the chamber oven for carbonizing coal in large bulk, the main product thereof being the gas. Hardly had we realized that the vertical retort had successfully emerged from the experimental stage, and taken the field in the competitive struggle with the well-tried systems of longer standing, when news reached us of the laying down, and working on the largest scale, a plant on a principle until then unknown in the practice of gas works. I refer to carbonization in large space chambers.

The introduction of a recovery plant into the coke oven industry has made enormous strides during the last 20 years. The development of this enterprise has shown that coal can be carbonized in bulk and the means of coking in a single receptacle a quantity of fifteen to twenty times the weight of coal charged into an ordinary gas retort has been worked out to great perfection. The gas being the by-product in coking practice, it is employed for the heating of the ovens, while with the gas retort this solid product serves as fuel. There is no theoretical reason why, under equal conditions and with a like coal, there should not be made a gas essentially the same character in both plants, the difference being rather in the use of the products than in their making.

Of course, the practical differences are of very much greater importance. Surface action on the larger bulk of coal or coke, and the difficulty of keeping the brick built chambers gas-tight, give a different aspect to the problem. The latter difficulty is to a large extent due to the indifference of the coke maker as to the quality of his gas, his mind being bent primarily on the quality of the coke. The fact, however, that coke oven gas, either enriched with benzol, or else a richer fraction separated during the first period of coking, has been used in place of retort gas in various large cities abroad, but especially in the United States, showed that carbonization in bulk for the production of illuminating gas was a problem within the reach of possible execution.

Mr. H. Ries, Engineer and Manager of the Munich gas works, evolved the scheme for the working out of this problem, and to him great credit is due for having designed and put up the first large-space chambers for gas production. The present type in use has 3 chambers to a setting, these being built on an incline of 35° 55', about 28' long (corresponding to 23 feet on the horizontal), each setting being able to carbonize 19 tons of coal, the fuel consumption ranging from 12 to 15 per cent. of the coal carbonized, the maximum period of carbonization being 72 hours. This time has been much decreased and suited to the supply of gas needed.

In the arrangement of the oven the object of the designer was to produce a setting in which the carbonizing chamber would be relieved as much as possible from the high pressure to which it is subjected during the distillation of heavy charges, and the resulting gases conveyed quickly away. This object is attained by providing the sloping roof of the chamber with two gas outlet pipes, both in connection with the same hydraulic main. The chamber is heated by the generator furnace located on the charging side, running up to the middle of the structure and provided with ashpan, grate and steam developers. The gases are tapped about 4 feet below the charging door of furnace, and mix with the preheated air coming from the recuperators. The hot gases are conducted along the sidewalls of the carbonizing chambers. At the top of each is a charging hole, which can be closed by a self sealing lid, while the discharging door is of special construction, which operates on a top hinge or axis and is locked by eccentrics and cross-bar at the bottom. From the roofs of each chamber rise two outlet pipes, one situated in the lower the other in the upper portion, near charging hole.

It should be noted that the front of each chamber is nearly closed with brick, except at the bottom, which has a small door similar to charging hole, closed with self-sealing lid. This door provides access to the charge should it be caught by some means and prevent the sliding of the coke. A pusher is introduced facilitating thereby the removal of the charge from the chamber. The method is seldom resorted to, as usually the coke discharges very readily.

The recuperator flues are of the horizontal system, 5 flues being the standard. A separate duct is located below the regular number which feeds the primary air to the steam developers. The heating flues are built on an incline to conform with the plant of the chambers. The object here is to heat the walls of each combustion chamber in such a way as to avoid heating very highly the gases collecting in the upper parts, and also to prevent the formation of carbon there. This is attained by having, on the sides of the chamber, gas-heating channels running longitudinally, which can if necessary be isolated, or regulated in groups. They are arranged one above the other, and can be inspected through sight-holes in the wall on the charging side of the furnace, for the purpose of adjusting the heats. The gas passes into a vertical main flue and dampers govern the amount of heat supply to each part of the chamber. The products of combustion pass upward in the incline flues, where they collect at the top and are again separated by damper slides before entering the waste gas flue.

The Koppers' patent chamber oven is constructed similar to the Munich oven on general lines, the characteristic feature being a set of vertical flues below the chambers, which allow an independent supply of gas and air, resulting in a very even heating of the chamber walls. Openings at the top of each flue give access for inspecting the combustion chambers and regulating the heat by means of firebrick slides.

The generator furnace is situated on the discharge side, the gas being taken off at the lower extremity almost directly above the grate bars. It passes up into a vertical flue which connects to the combustion flue or chamber, which at its center has a large damper. The recuperators are horizontal flues, 11 in number. The discharge door is almost the same as on the Munich oven. Gas is taken off only at one point; namely, at the top. The feeding-hole for the coal is situated in the top side of chamber at the uppermost portion. A hole is provided below the feeding door for pushing the charge, should this be found necessary. After the spent gases have traversed the chamber sides they are led to the bottom of the oven, where large waste gas flues are located, and these flues in part are used to act as the initial heaters for the air. Often the chimney flue is tapped to lead the gases for use in boilers.

Messrs. Kloenne have built a number of ovens, inclined, vertical and horizontal, the inclines and horizontal types finding considerable application. Here the difference lies chiefly in the heating flues. To avoid the formation of graphite in consequence of the decomposition or dissociation of the gas and the deposit of its carbon on the hot walls of the oven, the defect is obviated by keeping the heating flues below the level of the gas space, and further adding above the chamber a means for removing the superfluous heat. This is done by a passage of adequate cross-section, approximately equal to that of the gas space itself, which passage is either supplied

directly by a cooling medium or arranged to serve as a gas outlet. In the latter case auxiliary cooling passages are arranged on each side of it above the heating flues.

The combustion chambers are situated on the sides of the carbonizing chamber and are supplied with secondary air slightly below the top portion of the charge. In other respects the ovens are similar to the Munich and Koppers' types.

Recently the Rheinische Chamotte & Dinas Werke, Cologne, Germany, has announced a new patented incline chamber oven. That construction consists of placing 5 chambers in one setting, heated by a generator located on the charging side. Only one gas offtake is used at the top of each chamber. For charging coal and pushing the coke there is no differences with the other previously mentioned. The main features are again in the introduction of the gas and air in proportions exactly determined for the chambers, and in conveying separately to the outside the same quantities of dicharge gas, so that in all parts of the walls an even heat is given off, consequently producing a rapid and maximum quantity of gas and coke.

The generator gases are conducted to the rear of chamber into a main vertical flue, then discharged into two superimposed inclined flues, the lower feeding the rear and the upper the front portion of the chamber, the secondary air, rising upwards then downward, in the back of combustion chambers where it is introduced into the foregoing mixing flues. After rising on each side of the chambers the heating gases pass into a top chamber, where the travel is regulated by slides before they can enter the waste gas flues to chimney. The arrangement of the recuperator is more effective than in the other systems described.

Max Knoch, of Lauban, Germany, designed an oven in which each chamber is separately heated. The recuperator is situated below the chamber, the gases and air mixing at its bottom, then travelling up-and-down on the sides, meeting in a centrally located flue, where regulation takes place before discharging into the chimney. The chamber is set in an incline and has a single gas offtake. The main points of design are not very different from the previous ovens, except that each chamber is independent, and the heating gases serve the chamber at three points built like the combustion passages in inclined retort benches with several nostrils to each compartment.

Management & Commercial Methods.

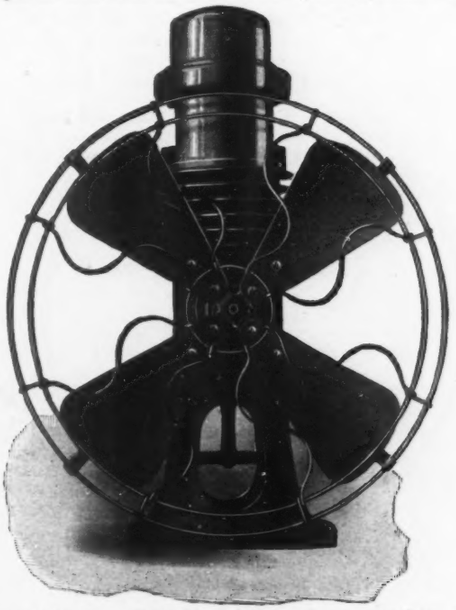
TIPS FROM FITTING TO COMMERCIAL DEPARTMENT.

DOWN-DRAFT GAS IRON.—A new type of gas iron, recently placed on the market by the Rosenbaum Mfg. Co., No. 5 Bleecker street, New York, is constructed with a double-wall, receiving its secondary air in a downward direction, thus eliminating the possibility of flash-backs, also the danger from excessive pressure forcing the flame through the side openings, as in the case of several older types of gas irons. These portable irons are perhaps as great an improvement over the old type of irons as the gas range is over the coal range. Having all the good features of an electric iron, they furthermore do not lose in efficiency whether the period of service be 1 year or 5. According to the *Electrical World* approximately 250,000 electric irons were sold in the United States and Canada during the past year, and while the figures for gas irons are not available, it is doubtful whether these exceeded those of their contemporary. As the gas iron means so much to the housewife, from the standpoint of comfort as well as economy, campaigning in respect to the sales of these goods would prove of great benefit.

THE BLOCK INNERLIN LINED GAS MANTLES.—The Innerlin gas mantle, manufactured and patented by the Block Light Company, Youngstown, O., represents a new departure in the manufacture of gas mantles showing considerable inventive ingenuity. The mantle consists of two bodies, being made from two separate fiber knittings, each separately treated with the chemical solution of thorium, exactly as if two individual mantles were to be made. One mantle is drawn over the other and the two are joined together.

The manufacturers claim that the Innerlin mantles, in addition to producing a strong, soft, white light, have the great advantage of being absolutely shrinkless. This is due to the fact that they are made with a lining. The double solution which these mantles must receive, and the influence of the intense heat under which a mantle is used, harden the two mantles into one solid body of toughness, thereby keeping it in full shape the entire life of the mantle, which lasts longer than those of the ordinary kind.

A GAS FAN.—The Essex fan motor, manufactured by the Essex & Smith Company, of 6 Lock street, Buffalo, N. Y., is an air engine, running by the simple expansion and contraction of air, directly connected with a 16-inch fan on the main shaft of the motor. A small flame of gas is used to expand the air and force out the piston of the motor. The air is then contracted by the cooling effect of the fan and the piston is drawn back into the cylinder, thus completing



a revolution of the fan. This expansion and contraction of the air in the cylinder take place with every revolution of the motor and the speed with which the fan revolves shows the wonderful quickness with which the operation is performed. Gas is the simplest and most convenient fuel to use whenever possible. The motor may stand on a table, shelf or other convenient place and may be connected in any ef the usual ways of gas appliances.

Meeting Times

OF THE VARIOUS GAS ASSOCIATIONS.

American Gas Institute.—Annual meeting, October 18, 19, 20, 21, 1911. St. Louis, Mo. Officers: President, Donald McDonald, Louisville, Ky. Secretary, A. B. Beadle, 29 West 39th st., N. Y. City.

Canadian Gas Association.—Annual meeting, June, 1911. ————. Officers: President, Arthur Hewitt, Toronto, Ont.; Secretary and Treasurer, John Keillor, Hamilton, Ont.

Empire State Gas and Electric Association.—Annual meeting, Nov., 1911. New York City. Officers: President, C. R. Huntley, Buffalo, N. Y.; Secretary, C. H. B. Chapin, 29 W. 39th street. New York City.

Gulld of Gas Managers of New England.—Annual meeting, March. Young's Hotel, Boston; monthly meeting, second Saturday. Officers: President, Walter G. Africa, Manchester, N. H.; Secretary, H. K. Morrison, Brockton, Mass.

Illinois Gas Association.—Annual meeting, time, March, Chicago, Ills. Officers: President, C. B. Strohn, Elgin, Ills.; Secretary-Treasurer, H. E. Newberry, Dixon, Ills.

Illuminating Engineering Society.—Annual meeting, Oct. Chicago, Ill., 1911. Meetings of Sections, monthly. Pres't, A. E. Kennelly, Boston, Mass.; Secretary, Preston S. Millar, 29 W. 39th street, N. Y. City. Sections: New York: Secretary, Albert J. Marshall, 36 West 39th street. New England, Secretary, W. S. Farrow, 1240 Massachusetts avenue, Cambridge, Mass. Philadelphia, Secretary, G. B. Muth, 1000 Chestnut street Chicago, Secretary, F. H. Bernhard, Marquette Building.

Indiana Gas Association.—Annual meeting, Jan. 17 and 18, 1912, Indianapolis. Officers: President, S. E. Mulholland, Fort Wayne; Vice-President, Howard L. Olds, Indianapolis; Secretary-Treasurer, Philmer Eves, Indianapolis.

Iowa District Gas Association.—Annual meeting, time, May, 24, 25, 26, 1911; Clinton, Ia, Officers: President, Austin Burt, Waterloo, Ia.; Secretary and Treasurer, G. I. Vincent, Des Moines, Ia.

Kansas Gas, Water and Electric Light Association.—Annual meeting, time, ———— Wichita, Kas. Officers: President, W. A. Scothorn, Hutchinson, Kas.; Secretary and Treasurer, J. D. Nicholson, Newton, Kas.

Michigan Gas Association—Annual meeting, time, Sept. 20, 2', 2', 1911; Detroit, Mich. Officers: President, A. P. Ewing, Detroit, Mich.; Secretary-Treasurer, Glenn R. Chamberlain, Grand Rapids, Mich.

Missouri Electric Light, Gas, Water Works and Street Railway Association.—Annual meeting, April, 1912; St. Louis, Mo. Officers: President, F. E. Murray, Louisiana Mo.; Secretary and Treasurer, N. J. Cunningham, Springfield, Mo.

National Commercial Gas Association.—Annual meeting, October 23-28, 1911. Denver, Officers: President, C. N. Stannard, Denver; Secretary, Louis Stotz, 29 West 39th street, New York City.

Natural Gas Association.—Annual meeting, May 16, 17 and 18, 1911; Pittsburgh, Pa. Officers: President, John M. Garard, Columbus, O. Secretary, T. C. Jones, Delaware, O. Editor Wrinkle Department, F. W. Stone, Ashtabula, O.

New England Gas Association.—Annual meeting, third Wednesday in February, 1911: Boston. Officers: President, W. H. Snow, Holyoke, Mass.; Secretary-Treasurer, N. W. Gifford, East Boston, Mass.

Ohio Gas Association—President, John M. Garard, Columbus, O; Secretary-Treasurer T. C. Jones, Delaware, O.

Oklahoma Public Utilities Association.—Annual meeting, May 9, 10 and 11, 1911. Officers: President, E. C. Reynolds; Secretary, Galen Crow, Guthrie, Okla.

Pacific Coast Gas Association.—Annual meeting, Sept. 20, 21 and 22, 1911, Oakland Cal. Officers: President, F. A. Lesch, Jr., Oakland, Cal.; Vice President, W. Baurhyte Los Angeles, Cal.; Secretary-Treasurer, John A. Britton, 445 Sutter street, San Francisco, Cal.

Pennsylvania Gas Association.—Annual meeting, April, 1912, Williamsport, Pa. Officers President, C. W. Butterworth, Millon, Pa; Secretary-Treasurer, William H. Merritt Lebanon, Pa.

Society of Gas Lighting.—Annual meeting, December, 1911; monthly meeting, second Thursday. Place, New York City. Officers: President, Fred. S. Benson; Secretary, George G. Ramsdell, 254 West 88th street, New York city.

Southern Gas Association.—Annual meeting, April, 1912, Jacksonville, Fla. Officers President, H. B. Hoyt, Jacksonville, Fla.; Secretary-Treasurer, E D. Brewer, Atlanta, Ga.

Southwestern Electrical and Gas Association.—Annual meeting, April 27, 28, 29, 1911: Houston, Tex. Officers: President, W. B. Tuttle, San Antonio, Tex.; Secretary, D G. Fisher, Dallas, Tex.

Wisconsin Gas Association.—Annual meeting, May 17 and 18, 1911, Milwaukee, Wis Officers: President, W. H. Winslow, Superior, Wis.; Secretary-Treasurer, Henry Harmon, Milwaukee, Wis.

PUBLIC LIGHTING TABLE FOR MAY, 1911.

[Communicated by The American Meter Company.]

Day of Week.	MOONLIGHT SCHEDULE.		
	Date.	Light.	Extinguish.
Monday	1	7.20 P.M.	4.00 A.M.
Tuesday	2	7.20	4.00
Wednesday	3	11.50	4.00
Thursday	4	12.30 A.M.	4.00
Friday	5	1.00 F.Q.	4.00
Saturday	6	1.30	4.00
Sunday	7	2.00	3.50
Monday	8	2.20	3.50
Tuesday	9	2.40	3.50
Wednesday	10	3.00	3.50
Thursday	11	No L.	No L.
Friday	12	No L. F.M.	No L.
Saturday	13	No L.	No L.
Sunday	14	7.40 P.M.	9.50 P.M.
Monday	15	7.40	10.50
Tuesday	16	7.40	11.40
Wednesday	17	7.40	12.30 A.M.
Thursday	18	7.40	1.10
Friday	19	7.40	1.40
Saturday	20	7.40 L.Q.	2.10
Sunday	21	7.40	2.40
Monday	22	7.40	3.00
Tuesday	23	7.40	3.30
Wednesday	24	7.40	3.40
Thursday	25	7.40	3.40
Friday	26	7.40	3.40
Saturday	27	7.40 N.M.	3.40
Sunday	28	7.50	3.40
Monday	29	7.50	3.40
Tuesday	30	7.50	3.40
Wednesday	31	7.50	3.40

PUBLICATIONS.

Fixtures.—Pamphlet describing a number of handsome types of candle fixtures. Manufactured by the F. W. Wakefield Brass Co., Vermilion, O.

Stocks.—Pamphlet entitled "One man does the work of two." Illustrated and describing the Toledo Pipe Threading Machine Company's products.

Hand Book.—The N. C. G. A. has issued a circular with sample pages describing the form of the new handbook. Manufacturers and commercial agents should take this up with Mr. Louis Stotz, Secretary of the Association, at 29 West 39th street, New York city.

Ranges.—Handbook, made up according to N. C. G. A. specifications, describing New Idea gas ranges. The A-B Stove Company, of Battle Creek, Mich., have followed the lead taken by Messrs. Rathbone, Sard & Co. in getting out their descriptive matter in an available as well as an attractive form.

Advertising.—Pamphlet containing suggestions for advertising copy. Methods used in preparing same and a number of sample ads. Wm. B. Crane Co., 18 West 32d street, New York city.

Diary.—May diary of the McWayne Pipe Works, Lynchburg, Va.

Gasarc.—The attractive monthly, issued by the General Gas Light Company, Kalamazoo, Mich., has shed its winter coat and now appears in black and white. It will pay you to get on the mailing list.

Wrenches.—Circular covering Spartan chain wrenches, Drop Forging Co., Fisk street, Jersey City, N. J. These wrenches are of two-bolt construction, and are made in 6 sizes to take from ⅛ to 12-inch pipe.

Conveyors.—Catalogue covering conveyors and transmission machinery, Webster Mfg. Co., 88 Reade street, New York city. The apparatus is fully described and the engineering data is sure to find a welcome in an engineer's library.

Items of Interest
FROM VARIOUS LOCALITIES.

On April 30th the firm of Hodenpyl, Walbridge & Co., was dissolved by mutual consent. Following the announcement came these; the first being that the firm of H. D. Walbridge & Co. was formed to transact matters connected with "The acquiring, financing and operating railway, gas and electric properties and dealing in securities," with headquarters in 7 Wall street. The members of the firm are: H. D. Walbridge, Jas. K. Andrews, Hiram S. Brown and F. E. Hoag.

The other announcement declares that the firm of Hodenpyl, Hardy & Co. has been formed, with offices also in 7 Wall street, the membership of which is: A. G. Hodenpyl, Geo. E. Hardy, B. C. Cobb, Jno. C. Weadock and Wm. H. Barthold. These gentlemen declare they are "engaged in the business of operating and acquiring public utility properties, and dealing in bonds, stocks and other securities."

Mr. A. S. B. Little, writing from Nashville, Tenn., under date of April 28th, says: "If anybody wants to know if advertising pays, tell them to ask Little?" In fact, as he further wrote, "A chief topic of conversation at the last meeting of the Southern Gas Association had to do with Little's straightforward advertising in the Journal. Three months ago Atlas paint was unknown to the gas men. But is there a gas man now who does not know of it?"

Well in advance of its annual meeting this month the United Gas Improvement Company issued its report for the transactions of 1910, to December 31st. The huge corporation's figures show net profits in the year amounting to $7,079,653, or a gain over last year's profits approximating 7¼ per cent. Of the profit dividends to shareholders absorbed $4,338,872, the sum of $725,500 was invested in sinking fund to the account of the Philadelphia gas works lease, and the balance was carried to surplus, which now totals $20,579,017, and stands for 37 per cent. of its total $65,502,950 capitalization. The sales of product show the following increases for the twelvemonth: Artificial gas, 10.7 per cent.; natural, 15.3 per cent.; electric current, 16.3 per cent. The gain on the Philadelphia division by itself was 6.8 per cent. Provision has been arranged for an expenditure during current year of $5,250,225 for extensions and improvements, of which considerably over 1 million dollars will be paid out on account of the Philadelphia plant. New investments for the year included the taking over of these properties: Conshohocken and West Conshohocken gas and electric lighting, and 42 acres of land on the Schuylkill river, near West Conshohocken, Pa.; the Charleston (S. C.) Railway and Lighting Company; the Northern Indiana Lighting Company and the merging thereon of lighting properties at South Bend, Mishawaka and Plymouth, Ind. The Company also subscribed to $1,129,000 of the Welsbach Lighting Company's new issue of $1,225,000 of preferred stock.

The special committee of Tampa (Fla.) City Council, charged among other things, with asking the owners of the Tampa Gas Company to reduce the rates, recently made the following report: "We have held several meetings and held a conference with the representatives of the Tampa Gas Company, and find from investigation that the said Gas Company about 2 years ago reduced the price of gas to the city of Tampa and agreed with the representatives of said city that they would reduce the price of gas to the individual consumer when the consumption increased from their then output to 60,000,000 feet per annum and that the consumption has not increased to the amount specified. We find that the price paid for gas in the city of Tampa is more than that paid for gas in Pensacola, Jacksonville and St. Augustine, and that the price of gas in Tampa is less than that paid in other towns and cities in the State of Florida. It is also recommended that the Committee be continued.

The Cruse-Kemper Company, of Ambler, Pa., has been awarded a contract for the construction of a holder up to retaining 500,000

cubic feet, by the proprietors of the Portland (Me.) Gas Light Company. The vessel will be finished according to the contractors' exclusive method of caulking the light sheets. Another recent contract for the Cruse-Kemper folks is a holder up to retaining 100,000 cubic feet for the Dover (Del.) Gas Company.

MR. WILLARD E. HOSKINS has resigned the position of Superintendent of the Willimantic (Conn.) Gas and Electric Light Company, the resignation to take effect next Monday. He has filled this place with marked success since his appointment thereto in 1904.

WITH much regret we announce the retirement of Mr. N. O. Goulding from the Superintendency of the Natick (Mass.) Gas Light Company, which concern he has served faithfully and sucessfully since 1896. His successor is Mr. Frank W. Jennings, of Framingham, Mass.

THE Fall River (Mass.) Gas Works Company has commenced the work of piping the streets of the outlying district of Somerset. "This," writes our informant, "is welcome news to many property owners. While electricity has been installed in many houses, and there are others who will have the work done this summer, numbers are waiting for gas because of the convenience of the gas range in the kitchen."

THE proprietors of the Amherst (Mass.) Company have announced that, beginning July 1st, the selling rate will be reduced to $1.50, from $1.80, per 1,000.

"THE sixth annual entertainment and dance, of the employees of the Cambridge (Mass.) Gas Light Company, which was held towards the close of last month," so writes one who attended, "was the most successful one yet held. The brunt of the affair was borne by Floor Marshall Robert Law and Director Alvin C. Hawkins. John Moriarity, the Sergeant-at-Arms, simply had a cinch."

WE understand that the gas, electric and traction properties, of Springfield, Ills., have been purchased by Mr. Harrison Williams, representing a New York city concern, known as the Federal Light and Traction Company. It is also said that the transfer does not imply that the local management of the properties will be changed. Which suggestion moves us to the thought that any set of new proprietors would be well stumped to secure a more capable Manager than Mr. W. A. Bixby.

THE handsome new quarters of the Haverhill (Mass.) Gas Light Company Club, eligibly situated on Merrimack street, have been finished in a style and equipped in a way that is sure to appeal to the comfort and pleasure of the members. Reception, reading and dining rooms have been located and furnished, and the outfit also includes a gymnasium and kitchen. Last, but not least, a meeting hall and a banquet room. The house was to have been "warmed-up" last Thursday, and possibly they will send us word now as to what was done. The officers of the Club are: President, Thos. Nickerson; Vice-President, Wm. Bell; Secretary, E. G. Ryan; Treasurer, O. A. Johnson; Librarian, Jno. Cook; Sergeant-at-Arms, Wm. Barnes; Trustees, Norman Wason, H. V. Vittonhoff and Wm. Bell.

MONDAY next W. C. Ulter, City Clerk of Madera, Cal., will open bids for a franchise for the right to there operate a gas plant for a term of 50 years. It is stipulated that the successful bidder shall, after the first 5-year period of the life of the agreement, pay into the city treasury the sum of 2 per cent. per annum of the gross receipts. A bond of $500 is required as a guarantee that the plant shall be in operation within 3 years from the signing of the franchise, and that the city shall have, at any time within the life of the franchise, the right "to purchase from the owner or owners thereof, the said gas plant or system at the fair and reasonable value thereof." A party named F. C. Roberts is the one at the base of this proposition.

THE Chestertown (Md.) Council has granted a franchise to certain parties (they were only represented by Counsel) under which it is proposed to construct and operate a gas works. Good people are behind that.

THE Directors of the Colonial Gas Company, which is formed for the purpose of supplying gas in Manchester, North York, Red Lion, Dallastown, York Haven, West York, Yoe, East Manchester, etc., Pa., are: H. P. Weiser, R. S. Cannon, John A. Hoober and C. T. Kraft.

MESSRS. GEO. S. PHILLER, Clarence A. Warden, W. H. Marshall, Elmer Smalling and R. T. Rankin, have applied to the Governor of Pennsylvania for the right to incorporate the Fuel Gas Company, of Dauphin County, Pa., "The character and object of which are the manufacture and supply of gas for purposes other than light to the public in the county of Dauphin, excepting only, however, out of said territory the city of Harrisburg, in said county."

THE feature of the April meeting of Yonker's Council, Royal Arcanum, which was held before a large audience, in beautiful Hollywood Inn, the last week in April, was a lecture on the manufacture and distribution of gas, by Mr. Charles Otten, Jr., Superintendent of Works, Westchester Lighting Company. The lecturer was in good voice, and most entertainingly placed before his audience the far from prosaic facts going with his subject. At the termination of the presentation the lecturer was rewarded by a rising vote of thanks.

MR. E. C. BURTON, General Superintendent of the Philadelphia (Pa.) Suburban Gas and Electric Company, on the night of the 29th ult., entertained at his home the officers of the Linwood Building and Loan Association, of Chester, Pa., the event being the 25th anniversary of its existence. During this period Mr. Burton has served it as Secretary. After dinner had been shared, many interesting incidents connected with the good work that had been done by the Society were narrated.

"C. N. W.," writing from Decatur, Ills., under date of Monday last, says: The H. Mueller Manufacturing Company is engaged in making quite a number of very important additions and extensions to its plant at Decatur, Ills., whereby it will gain much needed room and increase its facilities for turning out goods. An addition to the boiler room has been made consisting of a 2 story brick building, 100 feet square, which permits of a very notable increase in the power plant, and gives the Company something over 1,000-horse power, practically doubling the present power capacity. The foundry is being concreted and machinery will be introduced which will greatly increase the output, and at the same time materially lessen the labor connected with that department. A new galvanizing plant, about 38 by 40 feet and 35 feet high, is being built, but the old building formerly used for that purpose will not be abandoned, the new structure being necessary to take care of the firm's business. It will be strictly up to-date. The work of putting in a complete sprinkler system is in progress, thus giving the Company an additional safeguard against danger from fire.

MESSRS. W. F. BOARDMAN & CO., whose sterling reputation as gas men is known in every Pacific slope section, will at once construct the gas plant at Roseburg, Ore., a 50-year governing franchise for which was recently granted by local Councils. The construction will be under the supervision of Mr. Jno. D. Petch.

MR. DAVID LOSEE, formerly in charge of the plant at Somerville, N. J., has been appointed Superintendent of the Rockville and Willimantic (Conn.) Lighting Company, vice Mr. W. E. Haskins, resigned.

THE Pacific Gas and Electric Company, of San Francisco, Cal., after all charges were made (including sinking fund provisions) earned in 1910 the sum of $1,980,622, an increase over the previous year of $71,176.

AN explosion in the generating house of the Everett (Wash.) Company (the 18th ult.) badly wrecked the plant, which is of the acetylene gas type. No insurance; the companies on the Coast refuse to insure plants of this nature.

A MEMPHIS (TENN.) "Commissioner" named Dies, avers that he will never surrender until he has forced the Memphis Consolidated Gas and Electric Company to make a "sensible reduction" in its gas rates. If the queerly named official only lives until he can guarantee the Company something like a fair day's work out of the niggers that it is forced to employ he will never die. Apart from punning, sarcasm or other effort of the pen, it is a matter deeply to be deplored that the remaining drawback to the phenomenally quick development of the South is the nature of the labor that employers are forced to accept.

MR. HENRY L. COLEMAN, formerly of Waterloo, N. Y., has been appointed General Manager of the Empire Gas and Electric Company. His headquarters are in Auburn, N. Y., a field memorable to the Empire State gas men through the domination thereof of that estimable gentleman, Mr. D. M. Dunning.

The Market for Gas Securities.

The situation in respect of city gas shares is practically unchanged, although whatever difference exists is on the up, the gain in Consolidated being well over one point. It surely is a travesty on the judgment of investors when Consolidated is permitted to rest on a quotation under 175. Even on the present dividend return it nets 4.2 per cent., with a likelihood at any time of a doubling of the capital.

Brooklyn Union is steadier, the shares scoring a gain of 1 point in the week. This security is also absurdly low, considering the position of the Company. It is 142 to 143 this morning (Friday). Peoples, of Chicago, continues to sag, but in respect thereto it is safe to say that bowser Harrison will be returned to his fathers ere a 70-cent gas rate prevails there. There is a pronounced demand for gas bonds.

Gas Stocks.

Quotations by George W. Close, Broker and Dealer in Gas Stocks.

115 BROADWAY, NEW YORK CITY.

MAY 8

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share:

N. Y. City Companies.	*Capital.*	*Par.*	*Bid.*	*Asked*
Consolidated Gas Co.	$78,177,000	100	144¼	144½
Central Union Gas Co.—1st 5's, due 1972, J. & J.	3,000,000	1,000	103	105
Equitable Gas Light Co.—Con. 5's, due 1932, M. & S.	1,000,000	1,000	115	118
Mutual Gas Co.	3,500,000	100	155	165
New Amsterdam Gas Co.—1st Con. 5's, due 1948, J. & J.	11,000,000	1,000	100	101¼
New York & Richmond Gas Co. (Staten Island)	1,500,000	100	35	50
1st Mtg. Gold Bds. 5 p. ct.	1,000,000	—	98½	100½
New York and East River—1st 5's, due 1944, J. & J.	3,500,000	1,000	103	105
Con. 5's, due 1945, J. & J.	1,500,000	—	95	100
Northern Union—1st 5's, due 1927, J. & J.	1,250,000	1,000	94	100
Standard	5,000,000	100	50	70
Preferred	5,000,000	100	70	100
1st Mtg. 5's, due 1930, M. & N.	1,500,000	1,000	103	105
The Brooklyn Union	15,000,000	1,000	142	143
1st Con. 5's, due 1948, M. & N.	15,000,000	—	106¾	107
Yonkers	299,650	500	180	—
Out-of-Town Companies.				
Bay State	50,000,000	50	¾	5-16
" Income Bonds	2,000,000	1,000	—	75
Binghampton Gas Works	450,000	100	—	—
" 1st Mtg. 5's	500,000	1,000	95	100
Boston United Gas Co.—1st Series S. F. Trust	7,000,000	1,000	82	85
2d " " "	3,000,000	1,000	47½	50
Buffalo City Gas Co.	5,500,000	100	5	8
Bonds, 5's	5,250,000	1,000	50	60
Capital, Sacramento	500,000	50	—	35
Bonds (6's)	150,000	1,000	—	—
Chicago Gas Co. Guaranteed Gold Bonds	7,000,000	1,000	104	100¼
Cincinnati Gas and Electric Co.	29,500,000	100	92	93
Columbus (O.) Gas Co., 1st Mortgage Bonds	1,500,000	1,000	96	98
Columbus (O.) Gas Lt. & Heating Co.	1,682,750	100	90½	91
Preferred	3,036,500	100	75½	80
Consumers, Toronto	2,000,000	50	200	204
Consolidated, Baltimore	11,000,000	100	106½	—
Mortgages, 6's	3,600,000		89	100
Chesapeake, 1st 6's	1,000,000	—	—	—
Equitable, 1st 6's	910,000	—	—	—
Consolidated, 1st 5's	1,490,000	—	—	112
Consolidated Gas Co. of N. J.	1,000,000	100	15	—
Con. Mtg. 5's	976,000	1,000	92	95
Bonds	75,000	—	—	100
Denver Gas and Electric	3,500,000	—	102	105
Detroit City Gas Co.	6,580,000	—	—	50
" Prior Lien 5's	5,619,000	1,000	97	100½
Detroit Gas Co., 5's	881,000	1,000	75	80
Equitable Gas & Fuel Co., Caicago, Bonds	2,000,000	1,000	—	101
Essex and Hudson Gas Co.	6,500,000	—	39	40
Fort Wayne	2,000,000	—	—	—
" Bonds	2,000,000	—	55	—
Grand Rapids Gas Light Co., 1st Mtg. 5's	1,350,000	1,000	100	101
Hartford	750,000	25	190	200
Hudson County Gas Co., of New Jersey	10,500,000	—	112	113½
" Bonds, 5's	10,500,000	—	106	108½
Indianapolis	2,000,000	—	78	83
" Bonds, 5's	2,650,000	—	104½	105
Jackson Gas Co.	250,000	50	82	—
" 1st Mtg. 5's	200,000	1,000	97	100
Kansas City Gas Light Co., of Missouri	5,000,000	100	—	36
Bonds, 1st 5's	3,822,000	1,000	102	104
Laclede Gas Co., St. Louis	10,000,000	100	104¼	105½
Preferred	2,500,000	100	91¾	102
Bonds	10,000,000	1,000	102½	103
Lafayette Gas Co., Ind.	1,000,000	100	—	60
Bonds	1,000,000	1,000	60	65
Louisville	2,570,000	50	143	145
Madison Gas and Electric Co. " 1st Mtg. 6's	400,000	1,000	106	108½
Massachusetts Gas Companies, of Boston	25,000,000	100	91¾	92
Preferred	25,000,000	100	95¼	95½
Montreal Gas Co., Canada	2,000,000	100	218	218½
Nashville Gas Light Co.	1,000,000	100	110	—
Newark, N. J., Con. Gas Co.	6,000,000	—	56	58
Bonds, 6's	6,000,000	—	137	138
New Haven Gas Co.	2,000,000	25	200	—
Peoples Gas Lt. & Coke Co., Chicago	25,000,000	100	104 ⅝	104⅝
1st Mortgage	20,100,000	1,000	—	—
2d "	2,500,000	1,000	104	—
Rochester Gas & Electric Co.	2,150,000	50	88	—
Preferred	2,150,000	50	118	—
Consolidated 5's	2,000,000	—	104¾	105½
San Francisco Gas Co., Cal.	15,500,000	—	—	—
St. Joseph Gas Co.—1st Mtg. 5's	1,000,000	1,000	100	102
St. Paul Gas Light Co.	2,500,000	100	—	—
1st Mortgages, 6's	650,000	1,000	104	105
Extension, 6's	600,000	1,000	112½	115
General Mortgage, 5's	3,447,000	1,000	97	98
Syracuse Gas Co., N. Y.	1,975,000	100	50	55
Bonds	2,047,000	1,000	101	103
Washington (D. C.) Gas Co.	1,600,000	200	410	412½
1st Mortgage, 6's	600,000	—	—	—
Western Gas Co., Milwaukee	4,000,000	—	—	—
Wilmington (Del.) Gas Co.	600,000	50	861	—

Advertisers' Index.

New advertising, or changes in standing ads., to assure attention the issue following their reception, must be in hand on Wednesday.

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Fred Bredel Co., Milwaukee, Wis. 931
Michigan Ammonia Works, Detroit, Mich. 905
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Western Gas Construction Co., Fort Wayne, Ind. 926

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Wm. M. Crane Co., New York City. 918

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Atlas Paint Co., Nashville, Tenn. 908
C. L. Gerould, New Castle, Pa. 924
Ernst Strassburger, Chicago, Ills. 924
Laclede-Christy Clay Products Co., St. Louis, Mo. 914

CHARGING BARROWS & COAL WAGONS.

Davis & Farnum Mfg. Co., Waltham, Mass. 928
Kerr Murray Mfg. Co., Fort Wayne, Ind. 926
The Stacey Mfg. Co., Cincinnati, O. 931

COKE CRUSHERS.

Bartlett-Hayward Co., Baltimore, Md. 909
C. M. Keller, Columbus, Ind. 905

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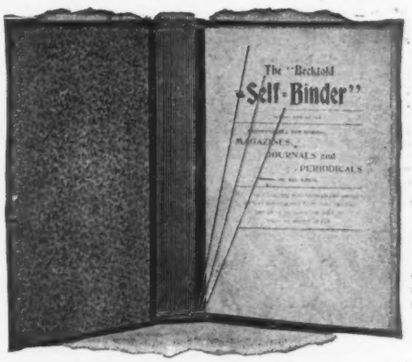

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Each bid must be signed by the bidder and his address given. Certified checks will be returned to all unsuccessful bidders, and to the successful bidder when contract is made and approved. All bids will be opened at 8 P.M. of date above named. The town reserves the right to reject any and all bids. Plats of town will be supplied all persons wishing to bid.

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Get rid of your tar at a good price, and at the same time make a gallon of tar do more useful work than you ever thought possible.

You can use this on your holders, too, if you want a black paint.

Get some of our meter enamel. Try our brickwork decorator. We make every kind of paint a gas company needs.

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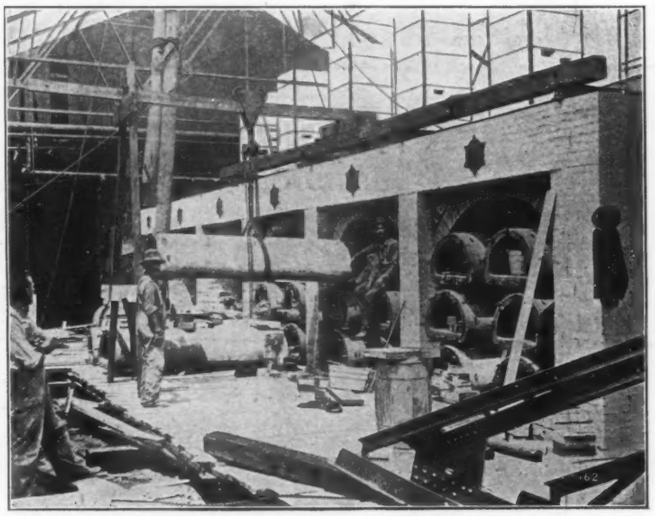

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The stamp of approval has been placed upon Doherty Economizer Benches by practical gas men in the most successful plants in the country.

This approval means more than all the claims or promises which we can make.

It is one of the very best reasons why **you** should install Doherty Economizer Benches in your plant.

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Lamp is made of heavy sheet steel porcelain enameled throughout.

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Uses 9-inch Ball Globe, Half Frosted, Opal or Acid Roughed.

Gas Consumption, 3 feet per hour. Candle power, 119.

POST furnished complete with fittings.

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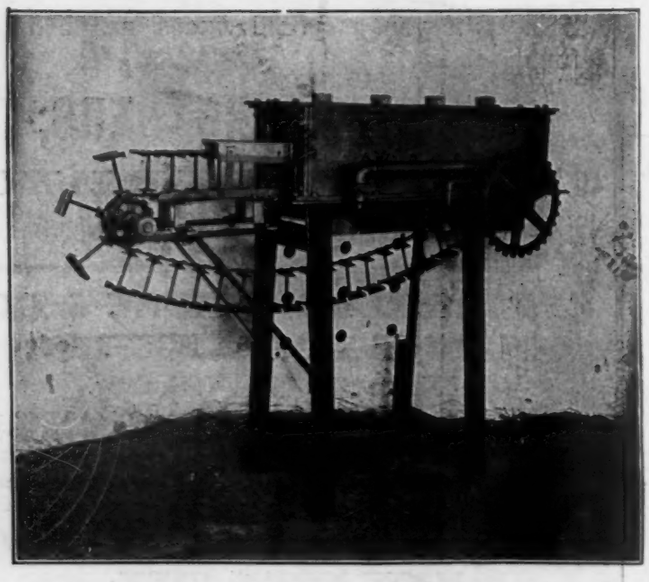

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"Heating Machines" are Furnaces provided with carriers or propelling machinery for the Continuous Transmission of Work through heated space, for Annealing, Brazing, Hardening and Tempering Quantities.

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INDUSTRIAL PURPOSES.

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AMOUNT - } OF WORK
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GLOBE STREET LAMPS.

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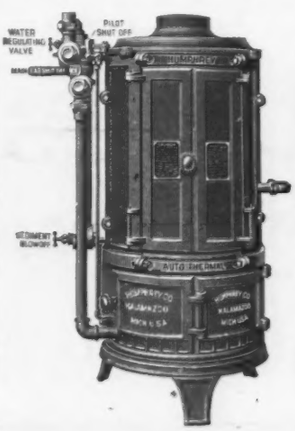

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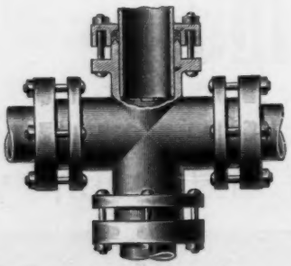
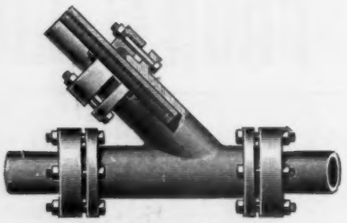
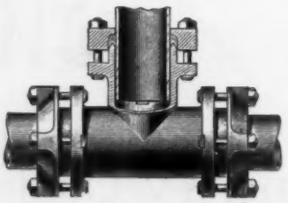


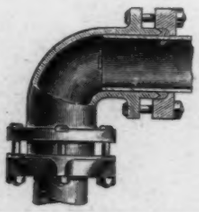
Crosses.
Style 17.



Y's--Branches 45°.
Style 29.



Tees.
Style 18.



Ells.
Style 15.

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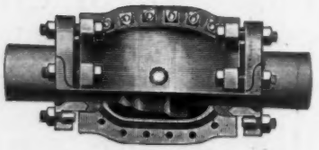

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Style 26.

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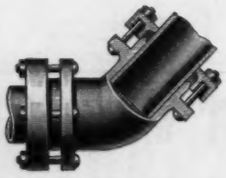
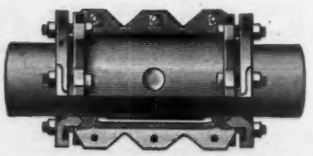


Angle Ells.
Style 16.



Light Split Sleeve for Cast Iron Pipe.
Style 27.

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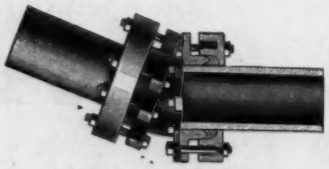
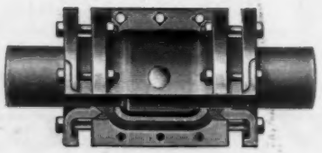


Angle Couplings.
Style 28.



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"Just Killed a Man in No. 2"

And the chills went right up your back.

"Ho-ho-how?" you stammered.

"That old elevator out there dropped with him," replied the foreman.

And you notified the Liability Company---the coroner came---the works went on---the widow and children---

But you---

Say, old fellow, don't you know that the getting up and down stairs is one of the most important things about your plant?

If there is any one thing you want the very best about your works, that one thing is the elevator.

There is just one good, reliable elevator, and that is the hydraulic elevator. All the great railroad terminals and great department stores and hotels use the hydraulic.

"But they cost like sixty!"

Yes, until the steam hydraulic came. Now we give you a perfect hydraulic at a moderate price that requires no pump.

And the most wonderful thing about it is the fact that it runs at virtually no cost, has no repairs, always goes.

And you don't pay a cent for it until it makes good in your own plant, before your own eyes.

We are equipping the best plants all over the land as fast as we can make elevators.

If you are half smart you will get our circular and find out why such concerns

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Elevator Makers to Folks who Know.

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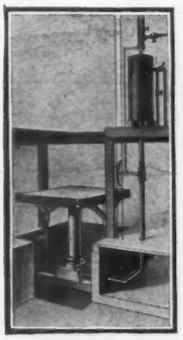
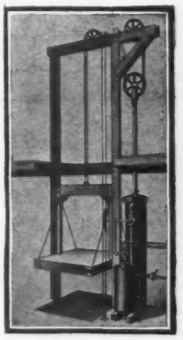
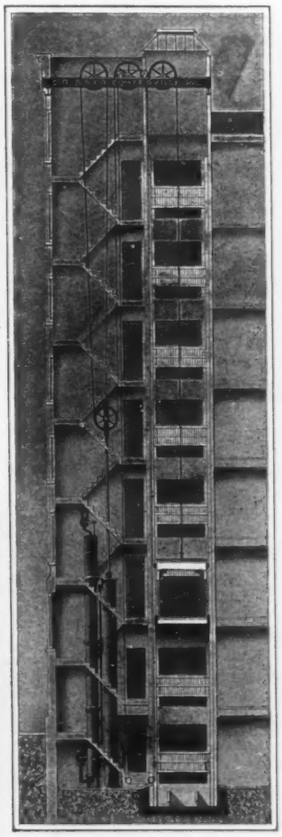


THE GAS MAN'S PET.





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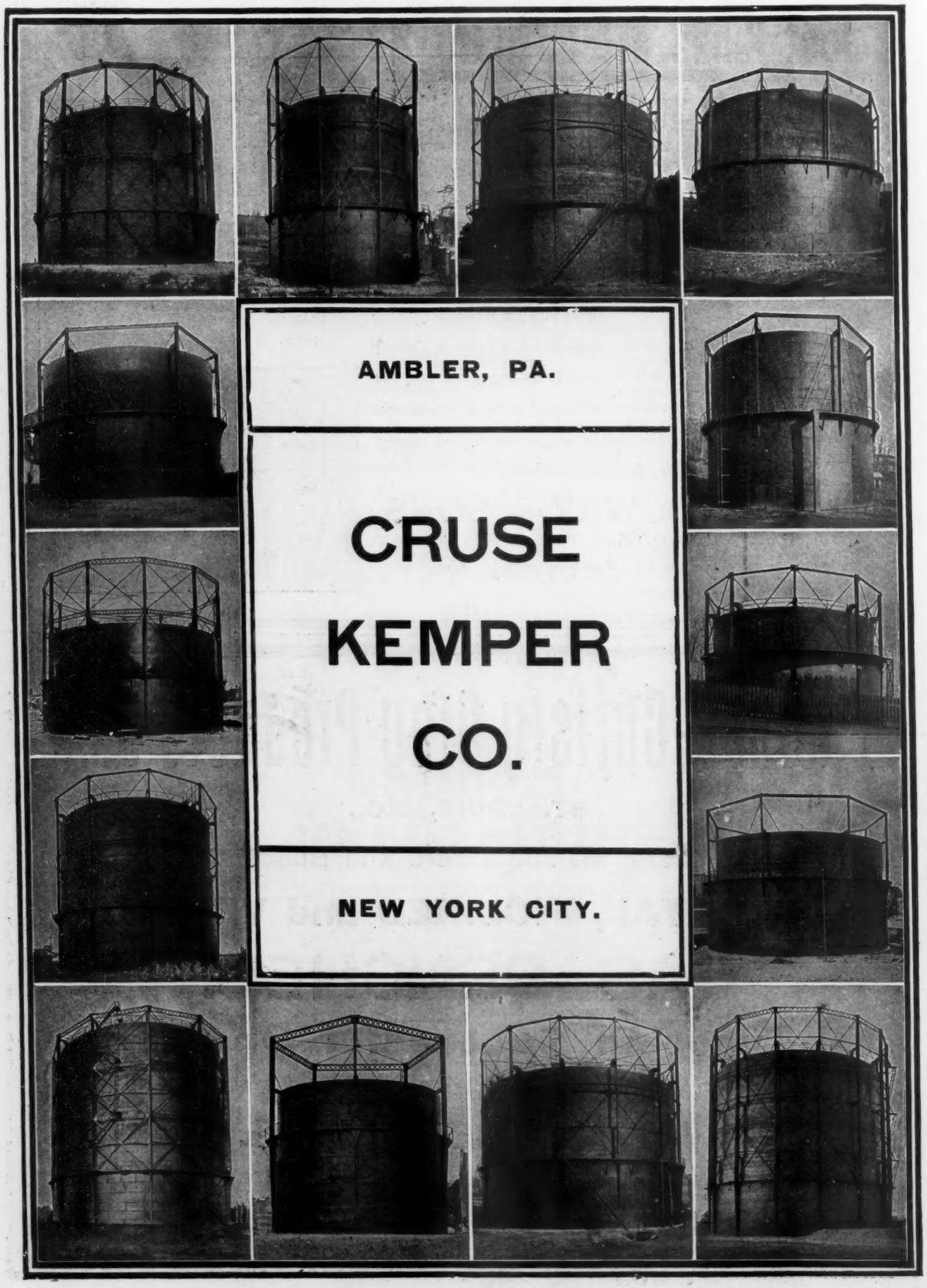
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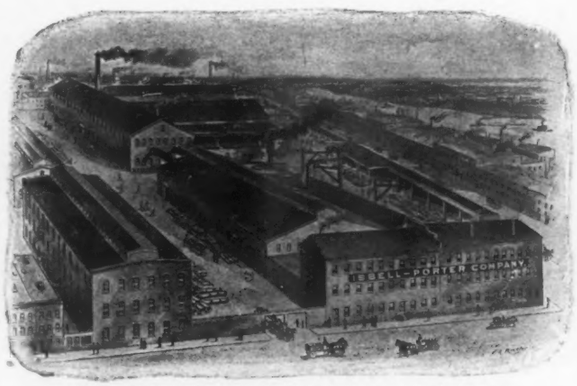

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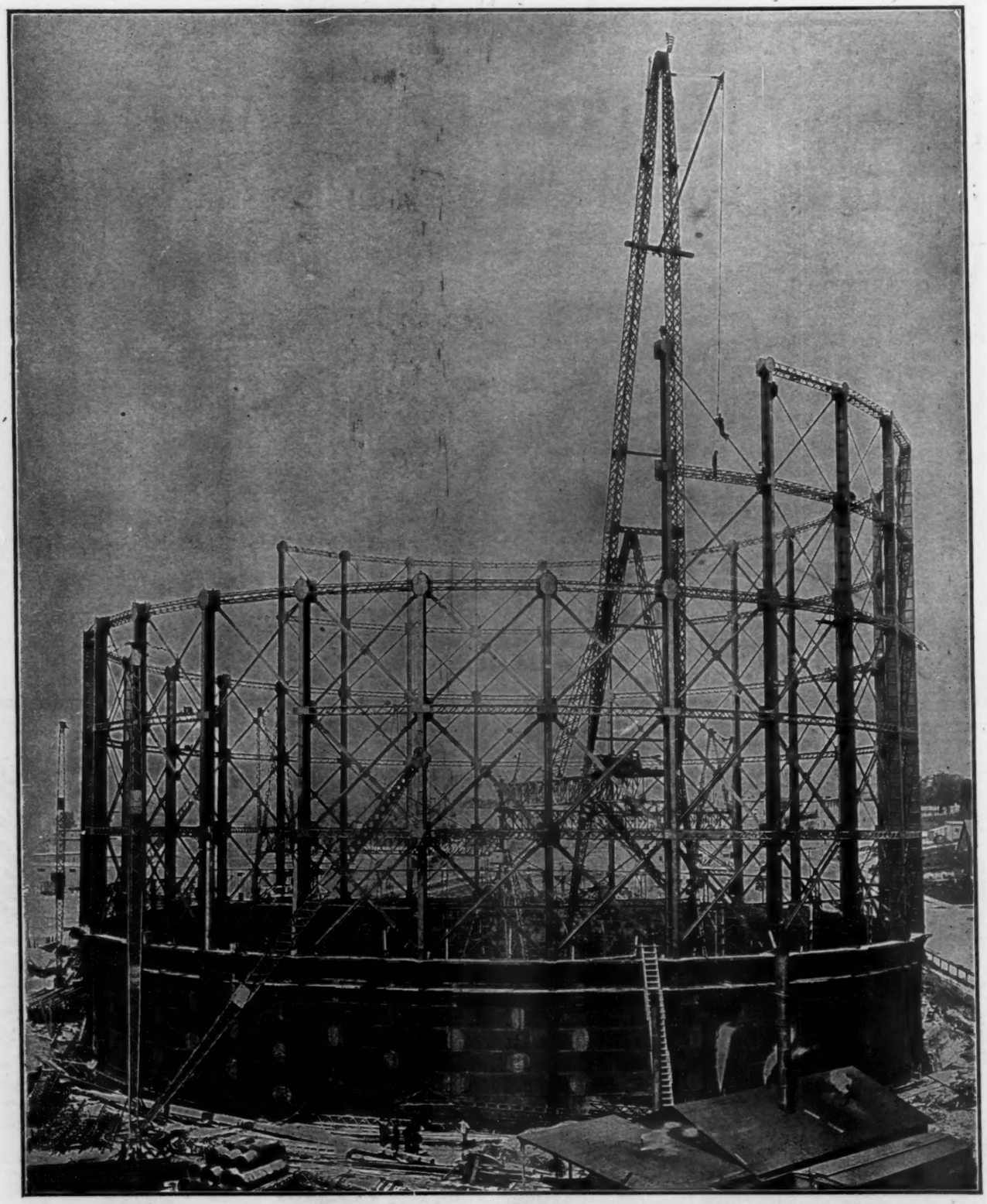

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PLATE AND STRUCTURAL WORK OF EVERY DESCRIPTION.

COMPLETE COAL GAS PLANTS.

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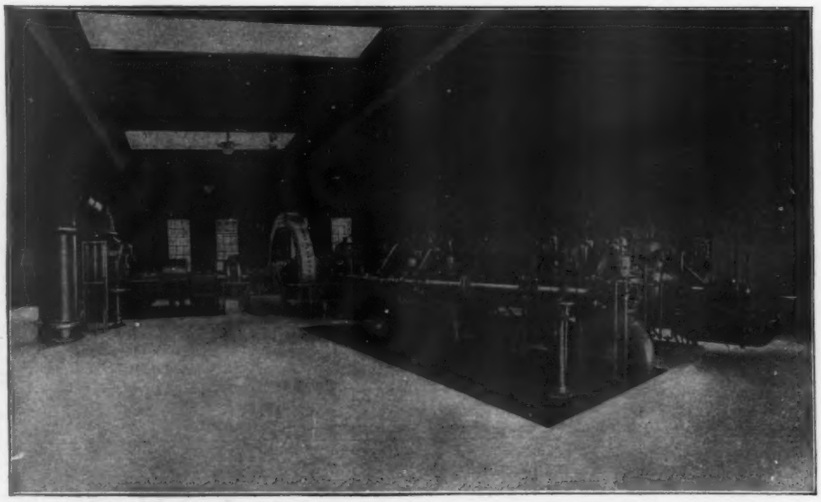
A half century of experience, up-to-date engineering and shop facilities embodied in these **World Famous Gas Exhausters.**



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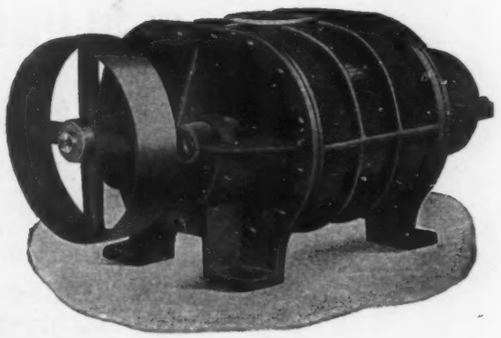

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Tempering,
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Ask for a temperature chart showing the melting, tempering and annealling points of different metals. IT'S FREE.

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EXHAUSTERS, CONDENSERS, SCRUBBERS,
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VALVES, CONNECTIONS,
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COMPLETE GAS PLANTS.

CONSOLIDATION

—OF—

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—AND—

THE GAS MACHINERY COMPANY, OF CLEVELAND.

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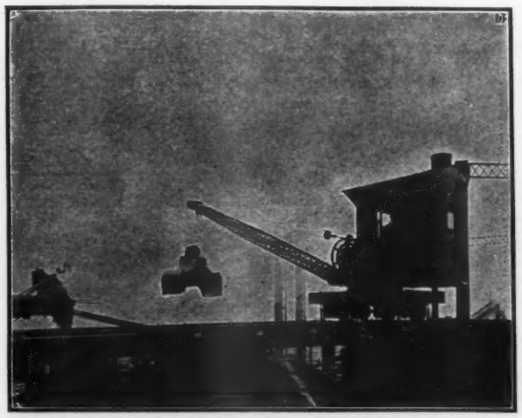
THE GAS MACHINERY CO.

CLEVELAND, OHIO.



AN ECONOMICAL EQUIPMENT,
A "BROWNHOIST" LOCOMOTIVE
CRANE AND GRAB BUCKET.

The illustration shows equipment in use at Malden and Melrose Gas Light Company.

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Cast Iron Pipe.
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Cutler's Patent Freezing Preventer for Holder Cups.

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That insures an absolutely tight joint between the Mueller Service Clamp and the main.

It is a Molded Lead Ring Gasket and fits in the groove in the underside of the Mueller Service Clamp, making a non-leakable joint.

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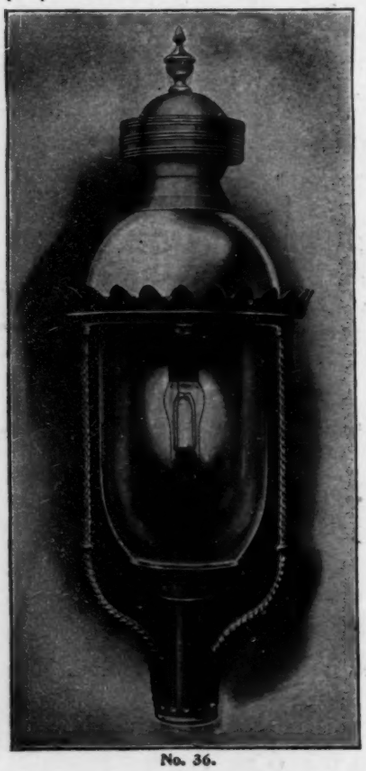
WELSBACH STREET LIGHTING COMPANY



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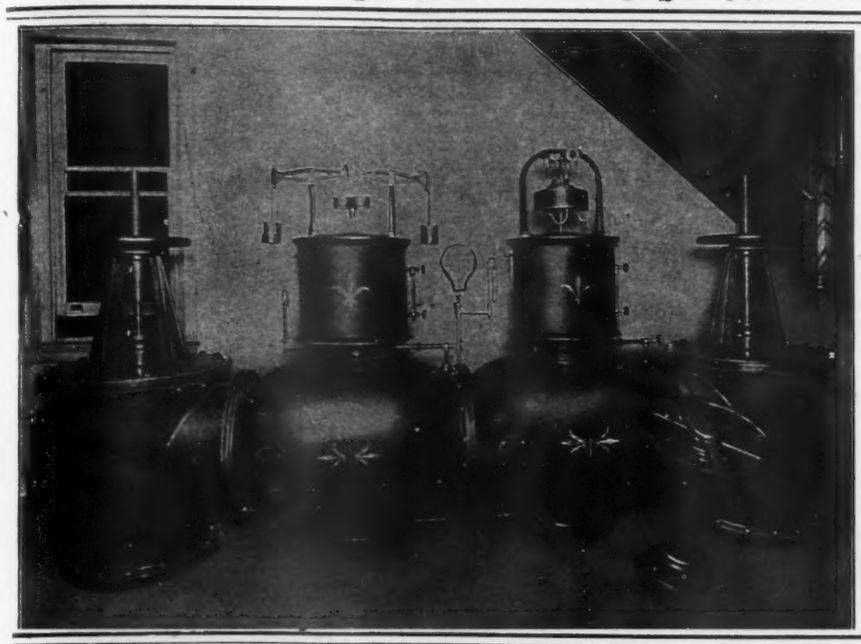

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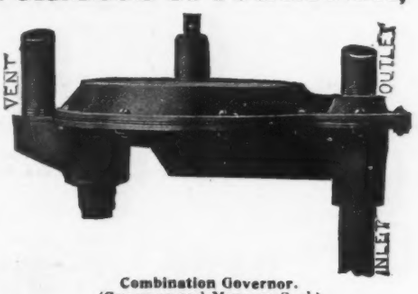

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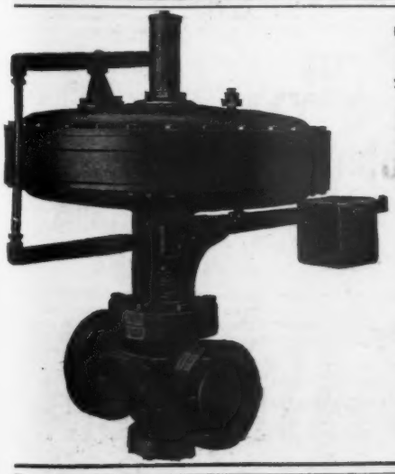

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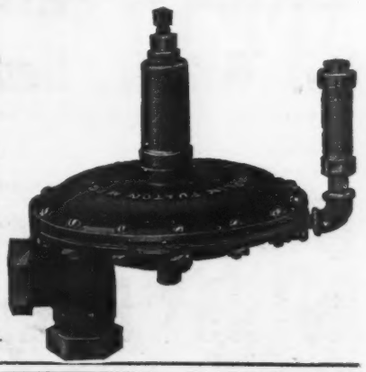

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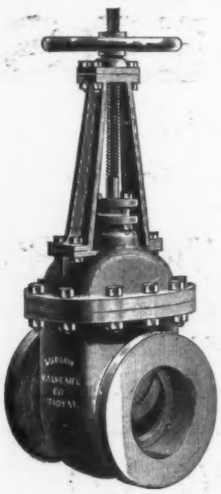

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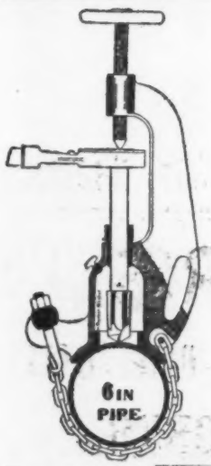

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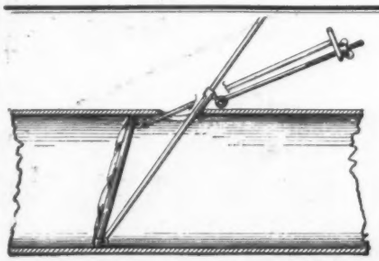

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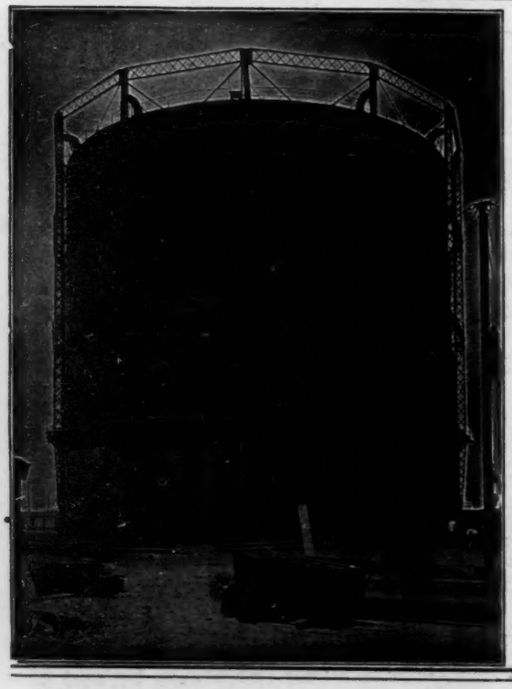

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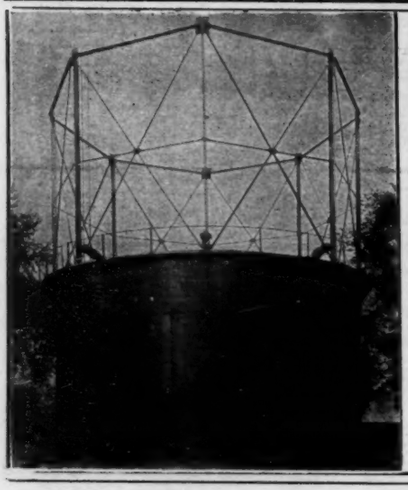

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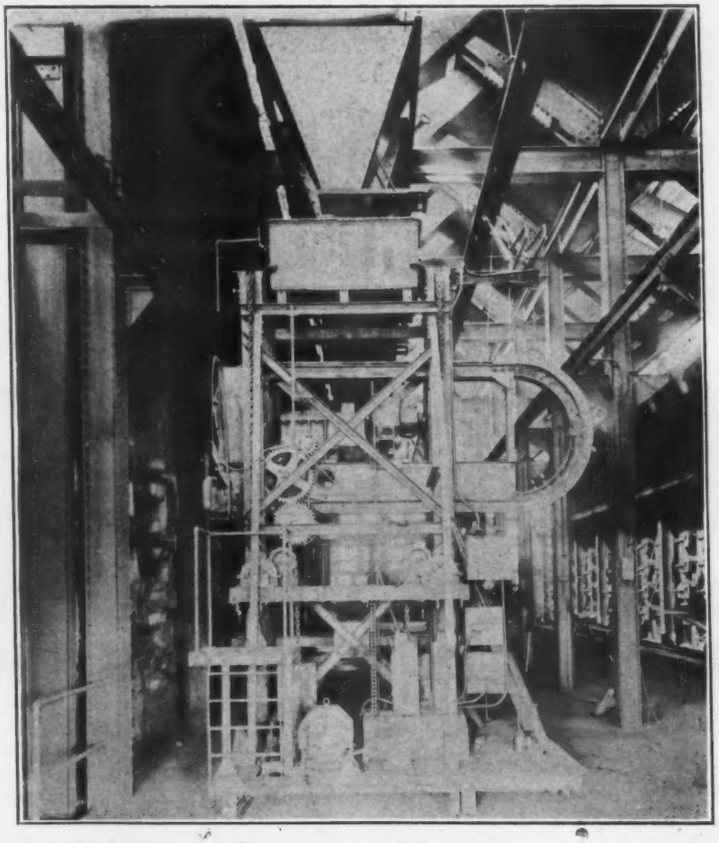

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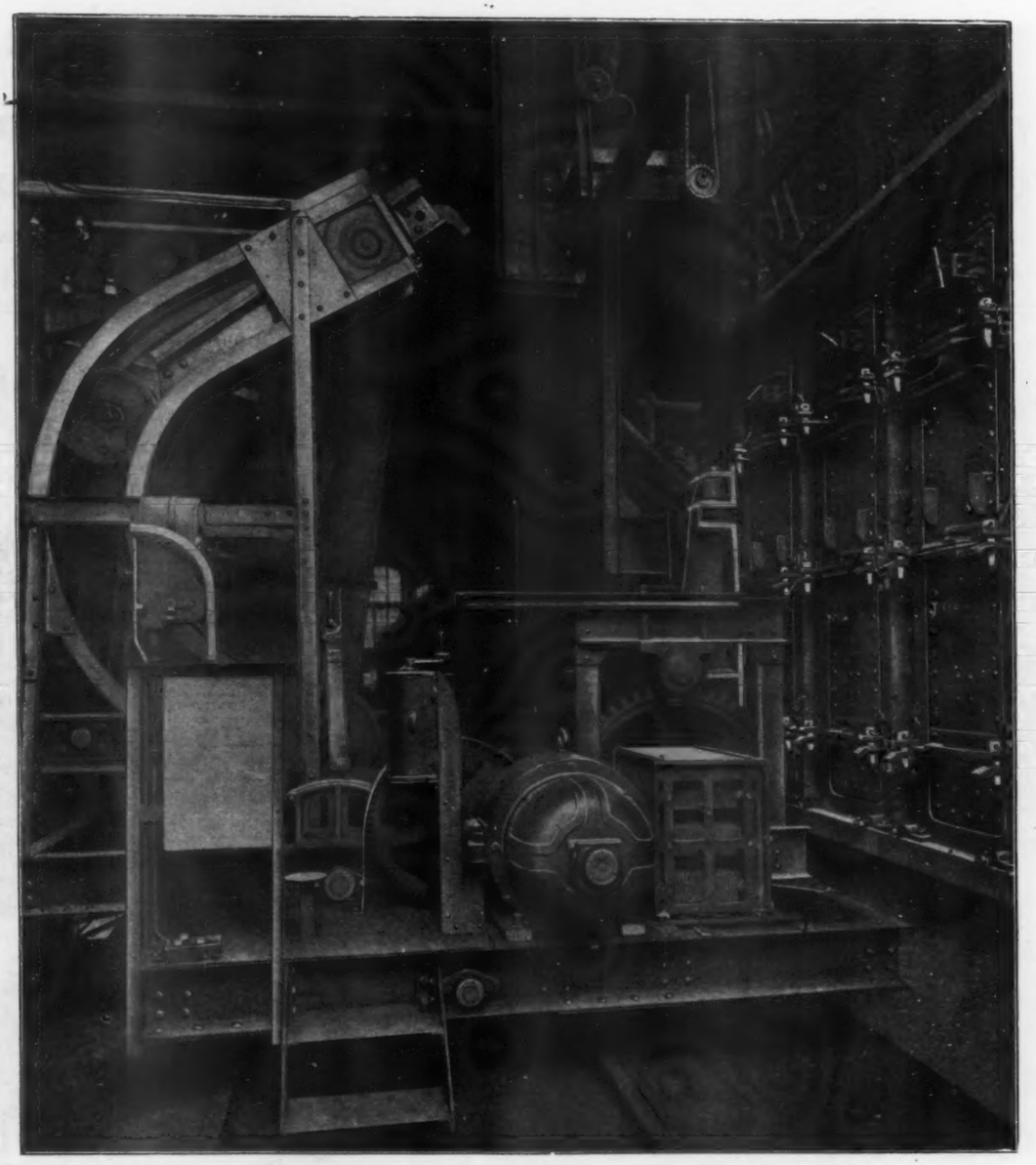

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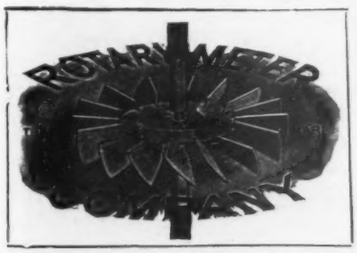

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THE WESTERN GAS CONSTRUCTION COMPANY

WORKS AND MAIN OFFICE FORT WAYNE IND U S A

GAS ENGINEERS

EASTERN OFFICE NEW YORK CITY. WESTERN OFFICE SAN FRANCISCO.

Broad Exchange Building. 901 Indiana Street,

IT IS SALES THAT COUNT.

The following list shows in what respect our Valves are held by six representative concerns. In every instance the original order was followed by repeat orders:

	1908.	1909.	1910.	Total.
Westinghouse Machine Co.	. . .	$1,746	$3,085	$4,831
H. Koppers	. . .	. . .	7,095	7,095
U. S. Steel Corporation .	$19,951	353	37,917	58,221
Los Angeles Gas & Elec. Co.	. . .	1,808	7,979	9,787
Milwaukee Coke & Gas Co.	. . .	3,017	271	3,288
East St. Louis Gas Co. . .	. . .	. . .	2,267	2,267
				$85,489

(There are others.)

Made in sizes from 4-inch to 72-inch.
Once used---indispensable.

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